

Food Safety in Kentucky Schools:



Guidance for a Food Safety Plan for School Cafeterias

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Table of Contents

I. Introduction	Page 5
II. Foodborne Illness	Page 6
Foodborne Illness in Child Nutrition Programs	
Common Handling Practices That Cause Foodborne Illness	
What to Do if a Customer Gets Foodborne Illness	
Potential Bacterial Contaminants	
Chemical Contamination	
Physical Contamination	
Laundry	
Waste Storage and Disposal	
Controlling Pests	
Destruction of Pests	
Design and Maintenance of Buildings	
FORM: Pest Control Monitoring Log	
III. Operating Procedures	Page 16
List Potential Hazards	
Identify Preventive Measures	
General Food Protection	
Ensure Food Prep and Serving Areas are Clean	
Consideration in Making a Food Safety Plan	
FORM: Potential Hazards	
FORM: Inspection Checklist	
IV. Receiving.	Page 22
Pre-Receiving	
Inspections	
FORM: Purchasing Record	
FORM: Incoming Inspection Report	
FORM: Record of Receipt of Product	
Preventing Cross-Contamination During Receiving and Storage	
Identifying Problems	
Receiving Raw Materials	
V. Storage	
Page 29	
Refrigerated Storage	
Freezer Storage	
Dry Storage	
Meat Storage	
Poultry, Egg and Dairy Storage	
Fresh Fruit Storage	
Fresh Vegetable Storage	
Vacuum Packaging Storage	
Canned Food Storage	
Baking Supplies and Grain Product Storage	
Milk Handling and Storage	
How Long Will It Keep?	
FORM: Refrigeration/Freezer Temperature Log	

VI. Preparation	Page 35
Thawing Potentially Hazardous Foods	
Proper Cooling of Potentially Hazardous Foods	
Preventing Contamination During Preparation and Cooking	
Cross-Contamination	
Food Temperatures	
Internal Temperature Guide	
Safety vs. Doneness	
Thermometers	
Kitchen Thermometers	
Thermometer Care	
Calibrating a Thermometer	
Using a Thermometer	
Microwave Cooking	
VII. Holding.....	Page 43
Cold Holding	
Hot Holding	
Off-Site Feeding	
Transporting Food Safely	
FORM: Food Temperature Inspection Log	
VIII. Serving	Page 46
Preventing Cross-Contamination While Serving	
Preventing Cross-Contamination in Customer Self-Service Areas	
Leftovers	
IX. Facility and Equipment Sanitation.....	Page 49
Five Steps to General Cleaning	
Cleaning Agents	
Using a Three-Compartment Sink	
Cleaning Fixed Equipment	
Using a Dish Machine	
Mechanical Dishwasher Using Hot Water as the Sanitizing Agent	
Mechanical Dishwasher Using Chemicals as the Sanitizing Agent	
Cleaning and Sanitizing Equipment Too Large for the Sink or Dishwasher	
Cleaned-in-Place Equipment	
Sanitizing Portable Equipment and Utensils	
Storage of Clean Equipment and Utensils	
Wiping Cloths	
Kitchen Cleanliness	
Contact Surfaces	
Sample Facilities Cleaning Schedule	
Sample Equipment Cleaning Schedule	
FORM: Equipment/Facilities Cleaning Log	
X. Employee Safety and Sanitation.....	Page 62
Employee Practices	
Hand Washing	
Smoking	
Culinary Customs	
Wearing disposable Gloves	
Prevention of Injuries	
Chemical Safety	
Customer Complaints	
FORM: Staff Training Log	
FORM: Customer Complaint Record	
FORM: Employee Food Safety Plan Checklist	

XI. Monitoring	Page 76
Establish Monitoring Procedures	
Examples of Monitoring	
Examples of Monitoring Requirements	
Successful Monitoring	
FORM: Monitoring Procedures	
XII. Corrective Action	Page 79
Establish Corrective Action Procedures	
Examples of Corrective Action	
Examples of Corrective Action Requirements	
Successful Corrective Action	
FORM: Staff Responsible for Corrective Action	
XIII. Verification	Page 81
Establish Verification Procedures	
Examples of Verification Procedures	
Successful Verification	
Verifying Training and Knowledge	
FORM: Verification Procedures Schedule	
FORM: Verification of Monitoring	
FORM: Verification of Corrective Action	
FORM: Food Safety Plan	
XIV. Record Keeping	Page 87
Establish Record Keeping Procedures	
FORM: Record Keeping Procedures	
XV. Sources	Page 89

I. Introduction

The consumption of contaminated foods causes many cases of food-borne illness each year. Most foodborne illness is caused by foods handled, prepared or stored improperly by food handlers in the food industry.

While everyone is susceptible to foodborne illness, there is a growing number of people who are more likely to experience such diseases and often with more severe consequences. These people include infants and young children, pregnant women, those who are immunocompromised and the elderly.

While the US food supply is among the world's safest, as many as 10,000 Americans -- mostly the very young and elderly -- die each year as the result of a food-related illness, according to government estimates (and cause an estimated 76 million illnesses, 325,000 hospitalizations). Medical costs and lost wages due to foodborne salmonellosis, only one of many foodborne infections, have been estimated to be more than \$1 billion per year and one case of foodborne illness costs a food service operation between \$15,000-\$74,000 in litigation costs.



In order to control food safety problems and prevent food poisoning, all food businesses including food service organizations should prepare their own Food Safety Plan based on the principles of the Hazard Analysis and Critical Control Points (HACCP) system. A HACCP system is the systematic application of good practices to the prevention of food safety problems.

You should be active -- not passive -- in your approach to prevention!

II. Foodborne Illnesses

Foodborne illnesses occur when a susceptible person gets sick from eating contaminated food. Most foodborne illnesses are caused by harmful microorganisms called pathogens. Depending on the type of contamination, foodborne illness may cause symptoms ranging from a mild upset stomach to death.

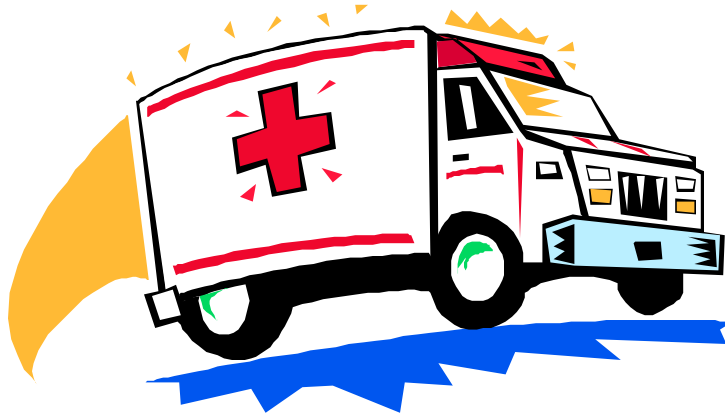
Symptoms of foodborne illness usually mimic a flu-like illness and may be followed by chronic illnesses.

Symptoms can include:

- Nausea
- Vomiting
- Diarrhea
- Abdominal Cramps
- Headaches
- Muscle Aches
- Fever and Chills
- Blood or Pus in Stool
- Exhaustion

More serious symptoms can include:

- Septicemia
- Localized infections
- Spontaneous abortion
- Reactive arthritis
- Guillain-Barre' Syndrome
- Hemolytic Uremic Syndrome
- Death



Symptoms can start any time from a few minutes to a few days after eating the contaminated food. Onset times depend on the type and amount of bacteria in food. The severity of symptoms ranges from mild to severe. You can be sick for hours and sometimes for days. When symptoms are severe, you should seek medical attention. Unlike most foodborne illnesses, the symptoms of botulism are neurological and can be fatal and emergency care is essential.

Young children are more at-risk for foodborne illnesses. This means that they are more likely to become seriously, or even fatally, ill than older children or adults, if they eat unsafe food. Infants and pre-school children are more at-risk for foodborne illness because they have not yet built up adequate immune systems. The immune system defends the body against illnesses and because young children do not have adequate immune systems, they are not able to fight off some of these illnesses.

Food microbiologists regularly discover information about harmful organisms that threaten the safety of our food. As new information is learned, new practices may be required to control or eliminate them.

Foodborne Illness in Child Nutrition Programs

Foodborne illness can have serious consequences for a Child Nutrition Program. These include:

- legal fees when death or serious injury occur
- medical claims
- lost wages for employees

- cleaning and sanitizing costs
- food that must be discarded
- bad publicity
- loss of confidence in the Child Nutrition Program by the community
- embarrassment, guilt feelings, remorse, etc.
- closing of the Child Nutrition Program

Common Handling Practices That Cause Foodborne Illness

- Inadequate cooking
- Prolonged storage at incorrect temperatures
- Improper cooling
- Inadequate reheating
- Inadequate thawing of food before cooking
- Preparation of food too far in advance and storage of food at ambient temperature
- Use of unsafe food source
- Use of leftovers
- Cross-contamination
- Infected food handlers



You should not work if you have a disease that can be spread through food (cold, hepatitis, flu). The bacteria or viruses causing these diseases are easily transferred from sick food workers to people who eat foods prepared or served by the sick worker. You should also not be working with food if you have symptoms such as diarrhea, vomiting, a sore throat, or an infected cut, burn or wound on your hand.

What to Do if a Customer Gets Foodborne Illness



1. Seek medical attention for customer if necessary.
2. Stop serving the food immediately.
3. Call the health department. They will work with you to determine how the foodborne illness occurred and how to prevent it from happening again.
4. Save the questionable food.

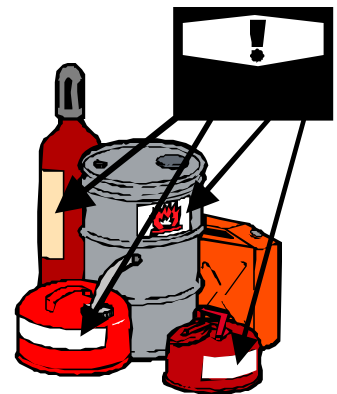
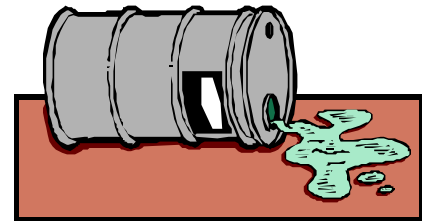
Potential Bacterial Contaminants

Disease	Organism	Source of Illness	Symptoms
Botulism	Clostridium botulinum	Spores of these bacteria are widespread. They produce toxin only in an oxygen-free environment of little acidity. Found in considerable variety of improperly or home canned foods, such as corn, green beans, soups, beets, asparagus, mushrooms, tuna, and liver pate'. Also in luncheon meats, ham, sausage, garlic in oil, lobster, and smoked and salted fish.	Onset: 4-36 hours after eating. Neurotoxic symptoms, including double vision, inability to swallow, speech difficulty, and progressive paralysis of the respiratory system. GET MEDICAL HELP IMMEDIATELY. BOTULISM CAN BE FATAL!
Campylobacteriosis	Campylobacter jejuni	Bacteria on poultry, cattle, and sheep can contaminate meat and milk of these animals. Chief food sources: raw poultry, meat, and unpasteurized milk.	Onset: 2-5 days after eating. Diarrhea, abdominal cramping, fever, and sometimes bloody stool. Lasts 7-10 days.
E. Coli	Escherichia coli 0157:H7	Bacteria in meat, raw milk, contaminated water, and unpasteurized ciders and juices.	Onset: A few days after eating. Bloody diarrhea, severe abdominal cramps, dehydration, colitis, neurological symptoms, stroke, hemolytic uremic syndrome, which can cause permanent kidney damage or failure and death. Lasts 4-15 days.
Listeriosis	Listeria monocytogenes	Found in soft cheese, unpasteurized milk, imported seafood products, frozen cooked crab meat, cooked shrimp, and cooked surimi (imitation shellfish). Resists heat, salt, nitrite, and acidity better than many other microorganisms. They survive and grow at low temperatures.	Onset: 7-30 days after eating, but most symptoms have been reported 48-72 hours after consumption of contaminated food. Fever, headache, nausea, and vomiting. Primarily affects pregnant women and their fetuses, newborns, the elderly, people with cancer, and those with impaired immune systems. Can cause fetal and infant death.
Perfringens food poisoning	Clostridium perfringens	In most instances, caused by failure to keep food hot. A few organisms are often present after cooking and multiply to toxic levels during slow cool down and storage of prepared foods. Meats and meat products are most frequently implicated. These organisms grow better than other bacteria between 120-130 degrees F.	Onset: 8-12 hours after eating. Abdominal pain and diarrhea, and sometimes nausea and vomiting. Symptoms last a day or less and are usually milk. Can be more serious in older or debilitated people.
Salmonellosis	Salmonella	Raw meats, poultry, eggs, milk and other dairy products, shrimp, frog legs, fresh vegetables, produce, sprouts, coconut, pasta, chocolate, and foods containing raw eggs.	Onset: 6-48 hours after eating. Nausea, abdominal cramps, diarrhea, fever, and headache. All age groups are susceptible, but symptoms are most severe for elderly, infants and inform.
Shigellosis	Shigella	Food becomes contaminated when a human carrier does not wash hands after using the toilet and then handles liquid or moist food that is not cooked thoroughly afterwards.	Onset: 1-7 days after eating. Abdominal cramps, diarrhea, fever, sometimes vomiting, and blood, pus or mucus in stool.
Staphylococcal food poisoning	Staphylococcus aureus	Toxin produced when food contaminated with the bacteria is left too long unrefrigerated. Meats, ham, poultry, egg products, tuna, potato and macaroni salads, and cream-filled pastries are good environments for these bacteria to produce toxin.	Onset: 30 minutes - 8 hours after eating. Diarrhea, vomiting, nausea, abdominal pain, cramps, and prostration. Lasts 24-48 hours. Rarely fatal.
Vibrio infection	Vibrio vulnificus	Bacteria live in coastal waters and can infect humans either through open wounds or through consumption of contaminated seafood. The bacteria are most numerous in warm weather.	Onset: Abrupt. Chills, fever, and/or prostration. At high risk are people with liver disease, low gastric acid, and weakened immune systems.
Cyclosporiasis	Cyclospora caytanensis	Source is unknown but it is suspected that parasites in water contaminate food washed with water such as berries, other fruit, raw vegetables, and basil and other fresh herbs.	Onset: About 2 days. Nausea, vomiting, loss of appetite, diarrhea. Lasts 1 week - 2 months.
Cryptosporidiosis	Cryptosporidium	Parasites in sewage, contaminated water that gets on food; not washing hands after using the toilet.	Onset: 1-12 days. Profuse watery diarrhea, abdominal pain, appetite loss, vomiting, low-grade fever.
Giardiasis	Giardia lamblia	Most frequently associated with consumption of contaminated water, including that in swimming pools. May be transmitted by uncooked foods that become contaminated while growing or after cooking by infected food workers. Cool, moist conditions favor organism's survival.	Onset: 1-3 days. Sudden onset of explosive watery stools, abdominal cramps, anorexia, nausea, and vomiting. Especially infects hikers, children, travelers, and institutionalized patients.
Hepatitis A virus		Mollusks (oysters, clams, mussels, and cockles) become carriers when their beds are polluted by untreated sewage. Raw shellfish are especially potent carriers, although cooking does not always kill the virus.	Onset: Begins with malaise, appetite loss, nausea, vomiting, and fever. After 3-10 days patient develops jaundice with darkened urine. Severe cases can cause liver damage and death.
Gastroenteritis	Norwalk and Norwalk-like viruses	Human feces; raw shellfish from polluted waters, ready-to-eat foods prepared by infected person; salads; sandwiches.	Onset: 1-2 days. Nausea, vomiting, diarrhea, abdominal pain, headache, low-grade fever. Lasts about 36 hours.

Chemical Contamination

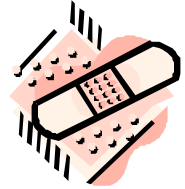
Chemical contamination can occur naturally in some foods, through food additives in processing, from stored cleaning/sanitizing chemicals, from pests, toxic metals in cookware and equipment, and from personal products.

- Poisonous or toxic materials should be stored so that they cannot contaminate food, equipment, utensils, linens or single-service articles (paper plates, plastic utensils, etc.)
- Make sure that employees do not wear nail polish, perfume, hair spray, etc.
- Carefully measure chemicals and use only proper amounts.
- Wash hands thoroughly after working with chemicals.
- Wash fresh fruits and vegetables with plain water. Also scrub thick-skinned produce with a vegetable brush to remove any possible residue.
- Keep food tightly covered or sealed during pesticide applications.
- Minimize the necessity of chemical pest control by following good sanitation practices.
- All chemical containers must be properly labeled, and the labels should be clearly displayed at all times.
- Chemicals must be kept in their original containers.
- Do not use chemical containers to store food. Some containers are toxic (i.e., garbage bags, galvanized cans, enamelware, porcelain items).
- If plastic bags are used to store foods, they must be made of food grade plastic.
- Food preparation sinks, hand-washing lavatories and ware-washing equipment (wash sinks) may not be used for cleaning maintenance tools (mops, etc.), the preparation of holding maintenance materials, or the disposal of mop water or similar liquid wastes.
- Maintenance tools such as brooms, mops and vacuum cleaners should be stored to prevent contamination and should be stored in a neat manner.



Physical Contamination

Physical hazards are physical objects that contaminate the food, such as hair, band aids, fingernails, etc.



Material	Injury Potential	Sources
Glass	Cuts, bleeding	Drinking glasses, bottles, jars, broken fixtures
Bone	Choking, trauma	Meat or poultry processing
Plastic	Choking, cuts (infection)	Packaging, pallets, employees, trays
Personal Effects (jewelry, acrylic fingernails, etc.)	Choking, cuts, broken teeth (may require surgery)	Employees
Metal Shavings	Cuts, bleeding	Opening cans with can opener
Parts of Machines	Broken teeth, choking, cuts, bleeding	Machines used in the food process

To prevent physical hazards:

- Inspect equipment.
- Do not repair equipment temporarily with items that could potentially fall into food.
- Remove staples, nails, etc., from boxes when food is received.
- Use only razor blades that are in secure devices.
- Inspect raw material.
- Wear proper attire.
- Do not wear loose jewelry or acrylic fingernails.
- Do not wear nail polish.
- Use hair restraints, such as hair nets.
- Do not store food in containers or bags that are not approved for food storage.
- Use commercial scoops -- not glasses - to scoop ice.
- Do not store items in the same ice that will be used for foods and beverages.
- Do not store toothpicks and non-edibles in food storage and preparation areas.
- Make sure glass bulbs are covered, shielded, or otherwise shatter-resistant in areas where there is food.
- Clean can openers regularly.
- Throw away dishes, glasses, and tableware that are chipped, bent or cracked.



Laundry

If a mechanical clothes washer or dryer is provided, it should be located so that the washer or dryer is protected from contamination and only where there is not exposed food, clean equipment, utensils, linens and unwrapped single-service and single-use articles.

Waste Storage and Disposal

Waste can be regarded as any item of food, ingredients, packaging materials, etc., which are not suitable for further use and are intended to be disposed of. Waste should be controlled carefully since it presents a risk of contamination of foods.

The importance of dry waste disposal is often overlooked in food processing plants as well as fast food outlets, hospitals, school cafeterias, etc. Unfortunately, this is sometimes looked on as a necessary evil and very little time is allocated to the cleaning of dry waste disposal units. Very small amounts of accumulated food debris left in the bottom of a trash container can be the food source and breeding area for literally millions of flies and other pests, not to mention multitudes of microorganisms. Use a scraper or hoe to loosen the caked material at the bottom of the trash container, then wash and spray it. This can disrupt the cycle and eliminate this particular source of insect infestation. Remember, research has shown that a single housefly is capable of carrying 6.5 million bacteria, many of which may be pathogenic.



Controlling Pests

Insect Control

Insect control devices that are used to electrocute or stun flying insects should be designed to retain the insect within the device. Do not locate insect control devices over a food preparation area. Dead insects and insect fragments should not fall on exposed food, clean equipment, utensils and linens or single-service and single-use articles.

Outer openings of a food establishment should be protected against insects and rodents by:

1. Sealing holes and other gaps along floors, walls and ceilings.
2. Keeping doors to the outside closed at all times.
3. Installing closed, tight-fitting windows with screens.
4. Ensuring that all doors are self-closing and tight-fitting.
5. Using screen doors.
6. Covering ventilation ducts and floor drains.
7. Storing garbage in containers with lids and remove promptly and regularly.
8. Storing food and supplies properly, at least 6 inches off the floor and away from the walls.
9. Storing food at low humidity and applying the first-in/first-out system.
10. Removing cartons, newspaper, etc., that may attract and harbor pests.
11. Cleaning up spillages of food immediately.
12. Keeping toilets cleaned and sanitized.
13. Keeping garbage in sealed plastic bags and inside tightly covered refuse bins.
14. Keeping dumpster and garbage cans, along with the areas they occupy as clean as possible.
15. Inspecting frequently.



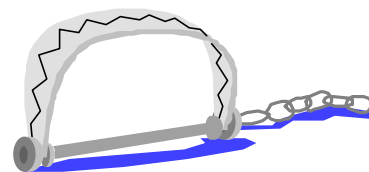
Use these steps to control the presence of insects, rodents, and other pests:

1. Routinely inspect incoming shipments of food and supplies.
2. Routinely inspect the premises for evidence of pests.
3. Use pest control methods, such as trapping devices or other means of control, if pests are found.
4. Eliminate the living conditions of pests.
5. Assign a pest to each employee. Examples include house flies, Oriental cockroaches, American cockroaches, German cockroaches, house mouse, Norway rat, grain/flour beetles, ants, bees, silverfish, termites and birds. Ask the employees to become “pest experts” and provide them with information on their assigned pest. Have employees survey the building to determine if there is a pest problem, potential entry points for their pest, and what could control that particular pest.

Destruction of Pests

Control of pests and use of pesticides are particularly critical in places where food is prepared, served or packaged. Most industries and institutions (such as schools and hospitals) are inspected for sanitation by one or more state, federal or local agencies.

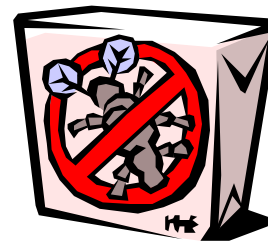
- Use chemical, physical or biological means (e.g. rodent traps) where there are signs of pests.
- Use a zapper or insecticutor to capture and kill flying insects. Ensure zappers are not above or within 3 meters of the food preparation or storage areas. Avoid spraying insecticide over food preparation surfaces.
- Hire a professional pest control company.



To assure food has been prepared, packed and held under sanitary conditions, The Federal Food, Drug and Cosmetic Act of the Food and Drug Administration (FDA) states the following:

"Sec. 402. A food shall be deemed to be adulterated . . . (a) (3) if it consists in whole or in part of any filthy, putrid, or decomposed substance, or if it is otherwise unfit for food; or (4) if it has been prepared, packed, or held under unsanitary conditions whereby it may have become contaminated with filth, or whereby it may have been rendered injurious to health; ..."

Examination of this passage of the Act reveals that any food product may be in violation if it is even held under conditions where food may become contaminated, regardless of whether it is a hazard to health. Regulatory action can be taken if food becomes contaminated, or is prepared, packed or held under conditions where it could become contaminated with insect fragments, rodent hair, bird feathers, feces, etc.



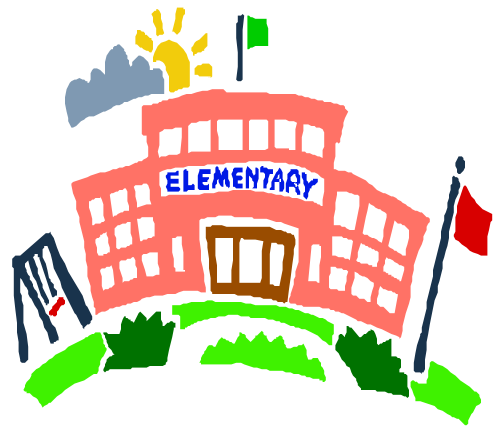
Top management is ultimately responsible for identifying a competent person to develop a pest prevention and control program. Give them the necessary support to carry out the program and ensure that pesticides are used in accordance with label instructions. Persons who apply pesticides in industrial and institutional settings have a responsibility to use the needed pesticide, to apply it correctly (according to label instructions), and to be certain there is no hazard to man or the environment. Guard against the spread of microorganisms and filth by flying and crawling insects, rats, mice, and other vermin.

Pest control is often ignored until pests and their damage are discovered. For example, if rodents or insects are found in a food storage room, temporary measures are taken to eliminate them. The real trouble, however, is not corrected. This situation needs a sustained effort, including: inspecting incoming food for evidence of insects or rodents before storing it, rodent proofing the room, storing the food off the floor, keeping the room clean, and inspecting the room for insect and rodent activity on a regular basis.

The method of treating a single outbreak is a poor concept of sanitation. In the heavily regulated food industry, this could be disastrous since contaminated food can be seized and destroyed and fines levied against the company. Embarrassment, bad publicity and economic loss to an industry or institution can sometimes be worse than regulatory actions. Take every fitting precaution to exclude the pests from all sections of the processing plant.

Design and Maintenance of Buildings

- Eliminate cracks and crevices in food storage and handling areas by proper construction or repairs. A tight, waterproof, smooth surface is easier to clean and keep clean. Properly construct concrete block, poured concrete or brick walls to eliminate cracks and pores that could offer insects shelter or access.
- Make all food handling and storage areas accessible to routine cleaning. Seal cabinets and kitchen equipment to the wall or floor, or have at least six inches of clearance to allow adequate cleaning. Kitchen equipment one to two inches off the floor or ¼ inch from the wall, is very difficult to keep clean and is usually an attractive site for cockroaches and other pests.
- Locate food handling machinery to allow thorough cleaning. Cracks and crevices leading into voids often form insect breeding and harborage areas.
- Containers should be stacked on pallets. Leave aisles between stacked containers and walls for inspection and cleaning. Where practical, stack items 18 inches off the floor and 18 inches away from walls. This is called the "18 inch rule of sanitation."
- Make sure that all doors and windows are tight fitting and that screens are provided on all windows and doors that can be opened. Screened doors should open to the outside. Take the nature of the surroundings into account when selecting construction materials.
- Food handling and storage areas should be rodent proof and bird proof. Remember, mice can enter openings less than ¼ inch, and rats can enter openings less than ½ inch in diameter.
- Remove waste food or garbage to proper storage or disposal sites at least daily.
- Design a routine schedule for cleaning all areas. Some areas may need cleaning only once a week, others every day. In addition, spot clean spills and accidents.
- When a new building is to be built, consult experts on the design and building materials to be used, since this is very important in a sanitation program.
- Train maintenance personnel in sanitation. Many maintenance personnel forget to clean tools used in the offal room before using them in the processing or packaging area. If someone has to step on a conveyor belt to reach an overhead motor, make sure that it is cleaned afterwards.
- Screen or seal vent pipes, sewage lines, and other openings in walls and floors to prevent vermin entry.



- The outside of the building presents the first impression of your operation to the public. Keep grass short, shrubs neatly trimmed and clean paved access ways.
- Maintain proper drainage to reduce or eliminate shelter areas for pests.
- Surround the building foundation with an 18 to 24 inch strip of 88 inch pebbled rock piled four inches deep in a trench. This discourages rodents from burrowing around buildings and keeps some turf pests from entering buildings. This makes an excellent area for traps and bait stations at food processing and storage facilities. If the bottom of the trench is lined with tar paper, weed growth will be retarded for a short time.
- To reduce pest and vermin harborage, control weeds under fences or other barriers with various herbicides labeled for this purpose.
- Clean up all debris and trash. Store necessary supplies and equipment on racks at least 18 inches off the ground or on concrete slabs to reduce rodent and insect harborage.
- Place garbage and food waste in enclosed containers that are emptied regularly. Containers should be off the ground on racks or on a concrete slab.
- Slope the grounds properly for adequate drainage. Poor drainage around buildings provides breeding places for insects (such as termites and cockroaches) and microorganisms (such as wood destroying fungi).
- Locate outdoor lighting fixtures at a distance from buildings and aim them toward the buildings to help keep flying insects that are attracted to light away from doors and windows.
- Instill in each employee the knowledge and desire to maintain cleanliness in a plant. Good housekeeping costs money, but poor sanitation costs more. Control over product quality begins with good sanitation today. There is no substitute for cleanliness and no excuse for its absence.



Pest Control Monitoring

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III. Operating Procedures

List Potential Hazards

Potentially hazardous foods are involved in most foodborne illnesses; these high protein foods support the rapid growth of disease-causing bacterial. A hazard is anything that may cause harm to the customer.

Examples:

- Harmful microorganisms that contaminate raw materials
- Harmful microorganisms that grow during processing
- Harmful microorganisms or toxins that survive heating
- Chemicals that contaminate food
- Physical objects that enter food

Of these, the most important hazard is likely to be harmful bacteria that may contaminate and grow in food. Cooked rice, beans, pasta, gravies, soups, potatoes, chili, tofu, fresh garlic in oil, milk and milk products, eggs, meat, poultry, fish, shellfish and edible crustaceans are some examples of well-known hazardous foods.

Identify Preventive Measures

List the measure that can be used to control the identified hazard. Examples of preventive measures are:

- Using reputable suppliers
- Requiring product specifications
- Adequate freezing and chilling
- Hand washing and good personal hygiene
- Proper cooking and temperature control and monitoring
- Effective cleaning and sanitizing
- Regular calibration of measuring instruments

General Food Protection

- Cover food to protect from overhead drips.
- Use sneeze guards and covers over self-service foods.
- Store food off the floor on pallets or shelves.
- Dispense bulk foods from approved containers.
- Use utensils to avoid hand contact as much as possible.
- Except for foods that are being cooled, all stored foods must be covered.
- Open displays of foods, such as salad bars, buffet lines, bakery items, and bulk foods must be covered or have sneeze guards.
- When storing foods in a storeroom or walk-in refrigerator, make sure that the food is stored off the floor.
- Do not store food or any food contact items in the restroom.
- Proper handling procedures are always followed by employees.

Ensure Food Preparation and Service Areas are Clean

- **Wash:** Wash dishes, utensils, cookware, cutting boards, appliances, equipment and cooking surfaces with hot, soapy water to remove visible soil.
- **Rinse:** Thoroughly rinse off soap and film.
- **Sanitize:** Regular chlorine bleach diluted in water is an easy-to-use germ killer. Do not rinse again.
- **Drying:** Air dry only. Do not wipe.
- **Nonporous Surfaces (tile, metal and hard plastics):** Use one tablespoon bleach per gallon of water. Leave wet for two minutes.
- **Porous Surfaces (wood, rubber and soft plastics):** Use three tablespoons liquid bleach per gallon of water. Leave wet for two minutes. Rinse with fresh water and air dry.

Considerations in Making a Food Safety Plan

Menu Planning	Customers Preparation requirements (time, storage capacity, personnel, etc.) Inventory/rotation Facilities/equipment Delivery
Recipe Development	Identification of ingredients Development of preparation steps Personnel/time factors Facilities/equipment Process cooling/advance preparation
Purchasing	Biological/chemical concerns Approved source Certificate of conformance (product meets buyer's standards) Delivery schedule
Receiving	Time/temperature Sensory evaluations Labeling product for inventory First-in/First-out
Storing	Time/temperature Personal hygiene practice Cross-contamination Inventory First-in/First-out
Preparing	Designated areas Equipment Thawing process Pre-chilled ingredients Batch preparation
Cooking	Type of equipment Internal product temperature Final cooking temperature Post-cooling contamination
Serving	Time/temperature Post-cooking contamination Personal hygiene
Holding	Time/temperature Raw vs. cooked product storage Post-cooking contamination Facilities/equipment
Cooling	Time/temperature Product density Container size/type Cooling method
Reheating	Time/temperature Facilities/equipment

Potential Hazards

[illegible]

Inspection Checklist

An inspection program is necessary for a good preventive sanitation program. You will need to have inspection forms to fit the needs of your industry or institution. A checklist developed by the National Pest Control Association is included to indicate the variety of items that should be inspected on a routine basis.

Location: _____ Date: _____

Time: _____

The items below are to be checked YES or NO to indicate if the guidelines of the NPCA Sanitation and Pest Control Floor-Level Inspection Manual are met. Entries in the right hand column indicate deficiencies which should be corrected

	YES	NO
A. EXTERIOR AREAS		
1. Absence of pest harborage	_____	_____
2. Absence of pest breeding	_____	_____
3. Garbage handling systems	_____	_____
4. Garbage storage area	_____	_____
5. Garbage containers	_____	_____
6. Garbage container cleaning	_____	_____
7. Trash disposal	_____	_____
8. Paving and drainage	_____	_____
9. Weed control	_____	_____
10. Perimeter rodent control	_____	_____
11. Perimeter insect control	_____	_____
B. BUILDING EXTERIOR		
1. Rodent proofing	_____	_____
2. Insect proofing	_____	_____
3. Bird proofing	_____	_____
4. Roofs	_____	_____
5. Other structures	_____	_____
6. Lighting	_____	_____
C. BUILDING INTERIOR		
1. Walls	_____	_____
2. Floors	_____	_____
3. Ceilings	_____	_____
4. Cleanability	_____	_____
5. Pits	_____	_____
6. Floor drains	_____	_____
7. Plumbing	_____	_____
8. Ventilation	_____	_____
9. Condensation	_____	_____
10. Lighting	_____	_____
D. FOOD STORAGE		
Packaged and Dry Food Storage		
1. Pest evidence absent	_____	_____
2. Proper storage practice	_____	_____
3. Good housekeeping	_____	_____
4. Empty container storage	_____	_____

	YES	NO
Damaged Good Storage		
1. Segregation	_____	_____
2. Repackaging	_____	_____
3. Proper housekeeping returned goods	_____	_____
4. Adequate handling program	_____	_____
Refrigerated Area		
1. Pest evidence absent	_____	_____
2. Condensation absent	_____	_____
3. Cleaning satisfactory	_____	_____
4. Other	_____	_____
E. FOOD PREPARATION AREAS		
1. Enclosed areas easily opened	_____	_____
2. Spaces under and behind equipment cleaned	_____	_____
3. Counter and surface areas clean	_____	_____
4. No permanent food storage in preparation area	_____	_____
F. DISHWASHING AREA		
1. Clean	_____	_____
G. GARBAGE AND TRASH AREA (INDOOR)		
1. Storage area for receptacles adequate	_____	_____
2. Storage area clean	_____	_____
3. Containers of proper type	_____	_____
4. Garbage containers regularly covered	_____	_____
5. Shows evidence of regular cleaning	_____	_____
H. TOILET AND LOCKER ROOMS		
Toilet Facilities		
1. Adequate for current number of employees	_____	_____
2. Sanitary and in good repair	_____	_____
3. Door self-closing and does not open into food area	_____	_____
4. Adequate ventilation and no offensive odor	_____	_____
5. Lockers regularly emptied and clean	_____	_____
6. Area free of old clothes and trash	_____	_____
Handwashing Facilities		
1. Adequate and convenient	_____	_____
2. Appropriate trash receptacles	_____	_____
I. LUNCH ROOM		
1. Accessible for cleaning	_____	_____
2. Clean	_____	_____
J. VENDING MACHINES		
1. Easily cleaned	_____	_____
2. Pest harborage absent	_____	_____
K. UTILITY AREAS		
1. Clean	_____	_____
2. Pest harborage absent	_____	_____

	YES	NO
L. OFFICE AREAS		
1. Clean	_____	_____
2. Regular trash removal	_____	_____
M. PUBLIC AREAS		
1. Floor areas clean	_____	_____
2. Equipment and counters easily cleaned	_____	_____
3. Pest harborage absent	_____	_____
N. INFESTATION ABSENT		
1. Rodents	_____	_____
2. Insects	_____	_____
3. Other	_____	_____
O. EVIDENCE OF PEST ABSENT		
1. Rodents	_____	_____
2. Insects	_____	_____
3. Other	_____	_____

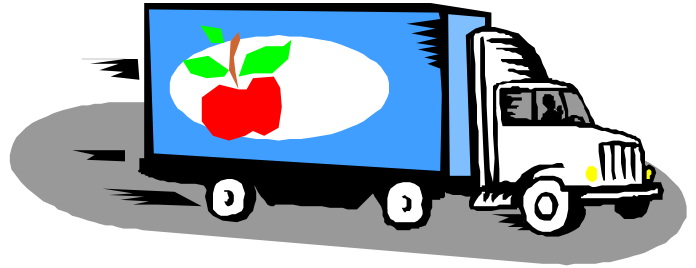
Inspector: _____ Date: _____

Remarks:

IV. Receiving

Pre-Receiving

- Ensure that all vendors are reputable before purchasing products and require quality assurance statements according to your specifications from all vendors.
- Before the shipment arrives, make sure that the storage space for the shipment is clean and dry.
- Make sure the equipment you will use to handle incoming food materials is clean and in good repair.
- Have the following tools available to that you can make a good inspection:
 - magnifying glass
 - flashlight
 - black light (ultraviolet light) source (for identifying rodent urine)
 - sample containers (plastic bags with self-seals or glass jars with covers)
 - Incoming Food Materials Inspection Report Form
 - marking pencil



Inspections

- Note the outside condition of the carrier. The outside condition of the carrier may indicate contents were exposed to contamination while in transit. Mud, dirt, water, oil stains or heavy insect debris on outside of carrier may have found its way to the products. For example, if the outside is wet, seepage may have occurred and contaminated the contents. Shipments are more likely to be contaminated if the carrier is an open bed truck that is not properly covered or a truck or boxcar that is visibly damaged. Notify your supervisor if you suspect a shipment was exposed to contamination while in transit.
- If doors of vehicle compartments have a seal, note if it is broken. The manufacturer affixed the seal to assure that you receive the high quality products he manufactured and shipped. If the seal is broken, the acceptability of the products in the shipment should be suspect. A broken seal may indicate that some of the merchandise was stolen or that poor quality products may have been substituted after your shipment was loaded and before arrival at your plant. Toxic non-food items may have been added to the load, or removed before delivery to you, possibly contaminating your products. Compartment doors may have been opened to air-out foul odors shortly before arrival at your receiving dock. Odors may have accumulated from trash, filth or spillage from previous shipments or your present shipment. Do not accept the shipment if the seal is broken. Notify your supervisor before proceeding further with the inspection and receiving.
- Break seal and open doors -- at the same time, note odor and temperature. If you find off-odors in any shipment, or the temperature is high in refrigerated loads, it may mean the delivered products are unsafe. Foul odors may have been caused by the failure to remove food particles, filth and infestation resulting from previous shipments and to clean the carrier properly before loading your shipment. The products may have been decomposed before being loaded, or may have absorbed harmful off-odors before shipment. Toxic solvents, petroleum products or chemicals may have



been carried with your shipment and unloaded before arrival or frozen products in refrigerated loads may have been allowed to thaw during shipment, permitting bacteria to grow and producing off-odors which have accumulated. High temperature in refrigerated compartments will allow the few bacteria normally present in the products to increase to dangerous numbers and to produce harmful decomposition products and odors. Do not accept the shipment if off-odor or high temperatures is observed. Instead, close the compartment doors immediately and tell your supervisor. These products can be dangerous to health and therefore they may be seized.

- Note condition of stacked cartons or other containers. Packages should protect the products they contain. If they are broken, crushed or otherwise damaged, their contents will be exposed to possible contamination. Broken packages or containers may mean the product was contaminated before it was loaded and shipped. The damage may have occurred while the product was in storage and contents exposed to insects, rodents or other contamination while awaiting shipment. Harmful chemicals or pesticides may have entered the broken containers or the shipment may have been improperly stacked or mishandled while loading or not protected while in route to your facility. Set aside all damaged cartons, containers and packages. Do not tape over or repair holes or other damages you may find in packages or cartons. Report to your supervisor if you discover many broken or damaged cartons.
- Look for evidence of insect, rodent and bird activity. Finding the presence of insects, rodent excreta, bird feathers or droppings or rodent urine is evidence products were exposed to contamination, making them unfit for food use. Pests are often carriers of disease-producing bacteria and parasites. Rodent excreta or droppings and urine can transfer these organisms to food products. The FDA will seize products stored in your storage facility if they are exposed to or contain insect or rodent or other filth. The filth does not have to be found in exposed products to make the product subject to legal actions. Decline any shipments that contain evidence of pests and notify your supervisor as soon as possible.
- Remove random samples of food containers for product examination. Samples should be representative of those in the entire shipment and may be relied upon to show if products are acceptable or contaminated. Follow proper instructions and know how to use all of the inspection tools. Proper sample collection and examination will help prevent accepting contaminated shipments that should be rejected.
- While unloading, note if non-food items are also in the shipment. Such products may be poisonous and can be a source of food product contamination. You don't have to find poisonous materials in the shipment to reject it. The Food, Drug and Cosmetic Act, which protects consumers, says in simple words that a food product is illegal if it is prepared, packed or held (or shipped) under conditions which may have caused it to become contaminated with filth or which may have caused it to become dangerous to the health of the consumers.
- After unloading, observe inside condition of the carrier. Floors and walls in disrepair and residue wastes from non-food shipments can cause contamination. Cracks and broken boards are good hiding places for insects which could invade the shipment while in transit. Residues from non-food items previously shipped in the carrier can contaminate food products and the presence of cracks, splinters or broken boards may have prevented satisfactory cleaning and sanitizing of the carrier's interior.
- Complete Incoming Inspection Report, taking care to note all signs of contamination or potential contamination whether or not you accept the shipment.



Purchasing Record

[illegible]

Incoming Inspection Report

Shipment or Product:		Date Inspected:		
Type of Carrier:		Name of Inspector:		
To the inspector: Check the space or spaces which indicate what you found during your inspection. Also note in the Remarks section anything else you found which is not listed on this form.				
1. Is the outside of the carrier:	Clean? ____	Muddy? ____	Dirty? ____	Oily? ____
2. Is the compartment door seal(s):	OK? ____	Broken? ____	Missing? ____	
3. As you open the compartment door(s):	Does it smell clean? ____		Do you smell any off odors? ____	
	Do you smell anything putrid or sour? ____		Do you smell petroleum distillate? ____	
4. Describe any other problem noted as you opened the compartment door.				
5. Is the temperature in the refrigerated compartment:	High? ____	Low? ____	OK? ____	
6. Are boxes, carbons or containers:	Properly stacked? ____	Improperly stacked? ____	Crushed or broken? ____	Scattered? ____
7. Is there evidence of activity by: If any of the answers to #7 are Yes, notify your supervisor immediately.	Insects (live or debris)? ____	Rodents (pellets, urine, etc.)? ____	Birds (droppings, feathers, etc.)? ____	
8. Is there any evidence of misuse of pesticides such as: If any of the answers to #8 are Yes, notify your supervisor immediately.	Tracking powder? ____	Insect Sprays? ____	Other? ____ Describe:	
9. Does the shipment include harmful non-food items?	Yes ____	No ____	Describe:	
10. How many cartons were in the shipment?				
11. How many of the cartons were randomly selected and set aside for examination?				
12. How many of the cartons were opened?				
13. How many of the packages taken from cartons that were examined?				
14. How many packages were found to be contaminated?				
15. Was the inside of the carrier in good shape?				
16. Was the carrier damaged?				
17. Was the carrier dirty?				
18. Was the carrier infested?				
19. Did the carrier contain trash and wastes from previous shipments?				
20. Had the carrier been swept clean?				
21. Describe any problems found in items 10-20 or make any other comments about observations of inspection.				

RECOMMENDATION: ACCEPT ____ REJECT ____

Record of Receipt of Products

[illegible]

Preventing Cross-Contamination During Receiving and Storage

Food safety practices begin long before preparation or service of meals occurs. To be sure the food you serve is safe, it must first arrive at your establishment safely. From there, safety is up to you. Preventing cross-contamination during receiving and storage is key to ensuring the safety of the food later.

- Make sure the receiving area is clean and well-lighted.
- Check how foods are stored in the delivery truck. This is especially important if a variety of items come in a single delivery. Make sure raw meats are stored away from produce and ready-to-eat foods and that the truck is relatively clean.
- Have clean hand trucks, carts, dollies and containers available in the receiving area. If products need to be washed or broken down and rewrapped, make sure a clean and sanitized work space is available.
- Clean and sanitize thermometers between using them with different types of food.
- Move food into storage as quickly as possible.
- Keep storage areas clean and dry. Spills and leaks should be cleaned up immediately to keep from contaminating other foods. Consider cleaning and sanitizing on a weekly schedule.
- All foods should be properly wrapped or stored in clean and moisture-proof materials. This will do a lot to prevent the food from dripping onto other foods or from contaminants from seeping into packaging.
- Store raw meat, poultry and fish separately from cooked and ready-to-eat foods above raw meat, poultry and fish. This will prevent raw product juices from dripping onto the prepared or ready-to-eat foods.
- Foods should be stored in this order: ready-to-eat and cooked foods on the top shelf; below that should be fish; follow with whole raw meats, then ground raw meats on the next two shelves; raw chicken is always stored on the bottom shelf. This order is based on final minimum internal cooking temperatures.



Identifying Problems

- Refrigerated, potentially hazardous food should be at 45° F or below when arriving at the kitchen.
- If food is received from the main cafeteria and transported to a satellite school, potentially hazardous food that is cooked and served hot to students should be 140° F or above when arriving at the satellite school.
- Cans with swelled tops or bottoms, leakage, flawed seals, rust or dents are not accepted by the operation.
- Dry goods are dry and free from mold and insect infestation.
- Packages should not be punctured, slashed or torn.
- Food that is labeled frozen and shipped frozen by a food processing plant should be frozen when it arrives at the kitchen.
- When potentially hazardous food arrives, check that the food does not show signs of previous temperature abuse (such as keeping food out of proper temperature for a period of time.)
- Shell eggs should be clean and sound (not cracked) when they arrive at the kitchen.
- Liquid, frozen and dry eggs and egg products shall only be pasteurized.
- Fluid and dry milk and milk products must be pasteurized.

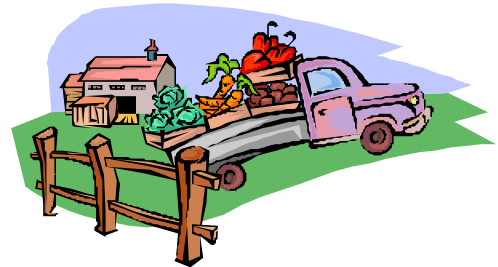


- Cheese and should be pasteurized.
- Food packages should be in good condition (not ripped or open) and should protect the food so that it is not exposed to potential contaminants.
- All food received into the kitchen should have the receiving temperature recorded on log sheets with date and time before storing.
- All foods received should be visually checked for package integrity, insect and rodent activity before placement into storage. Each product should be checked for odor, sight and touch.
- No food should be prepared at home and then transported to the site. Serve foods from approved sources only.
- If in doubt-throw it out.

Receiving Raw Materials

Raw materials must be checked on delivery. Different ingredients and foods will need to be checked more frequently depending upon the degree of risk they present.

- Check for the presence and growth of harmful bacteria.
- Check for damaged packaging and contamination with foreign matter
- Check or label date codes, temperatures, etc.
- Move chilled and frozen foods to cold storage as quickly as possible.
- Check delivery vehicles for sanitary practices.



V. Storage

Refrigerated Storage

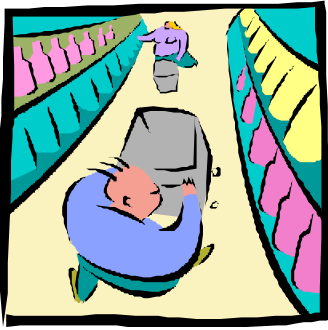
- If possible, food should be stored in its original container if the container is clean, dry and intact. If necessary, food is re-packaged in cleaned and labeled containers.
- Immediately cool hot food leftovers at or below 45 ° F. Place food in shallow containers or divide food into smaller containers to quickly cool food. Do not cover tightly.
- Store raw food products below cooked foods or foods that will not be cooked. Cover foods to help prevent cross-contamination.
- Store beef on lower shelf. Label and date container. Use first-in/first-out rotation. Beef temperature must remain below 45 ° F.
- Label and date vegetables containers. Use first-in/first-out rotation. Store above raw, potentially hazardous foods.
- Refrigerators should not be overloaded.
- Do not unnecessarily open and close refrigerator doors and minimize the amount of time door remains open.
- The colder a food item is kept, the safer it is. Keeping food cold also protects its quality.
- Foods, whether raw or prepared, that have been removed from the original package for storage in a refrigerator should be placed in a clean, non-absorbent and covered container and labeled.
- Do not store food in a can once the can is opened. Transfer the contents to an airtight container.
- Prepared foods must be stored above, not below, raw foods.
- Refrigerator air temperature must be 41 ° F or lower to keep food at or below 45 ° F.
- Regularly check the refrigerator air unit temperature with a reliable thermometer and record the temperature daily.
- All food stored in the refrigerator should be covered, dated and labeled.



Freezer Storage

- Freezers must be maintained at an air temperature of 0 ° F or lower.
- Frozen food should be placed in freezer storage immediately after delivery and inspected if not being used that day. If the food is to be used or prepared that day, food should be kept frozen or refrigerated -- not held at room temperature.
- Remove food from freezer storage in quantities that can be used immediately.
- Only frozen or pre-chilled foods should be put into the freezer unit. Warm food products will raise the temperature of the freezer.
- To pre-chill foods, immediately move hot leftovers to the refrigerator and place in shallow containers or divide food into smaller containers to quickly chill foods.
- Place an easily visible thermometer in the freezer to record temperature.
- Whenever possible, frozen food products should be stored in the original cartons in which they were shipped.
- All food stored in the freezer should be adequately packaged, dated and labeled.
- Once a frozen food has been completely thawed, the food can not be refrozen.

Dry Storage



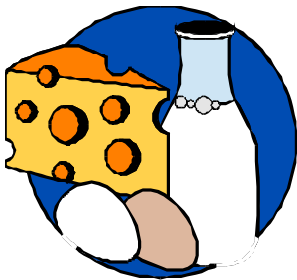
- Dry storage areas should be well-ventilated, well-lit, clean and protected from pests and excessive heat and moisture.
- 60-70° F is adequate for dry storage -- 50° F is ideal for dry storage (with an ideal humidity level of 50-60%).
- Practice first-in/first-out rotation of foods in storage.
- Keep all food containers covered.
- Clean up all spills immediately.
- Do not place any food items on the floor.
- Do not store trash or garbage cans in food storage areas.
- Ready-to-eat foods should be stored above raw foods.
- Pesticides and chemicals are stored in a locked cabinet away from food handling and storage areas.
- Detergents, sanitizers, polishes and other cleaning agents should never come into contact with food and should be stored in original labeled containers, away from food storage.

Meat Storage

- Meat should be placed in a refrigerator or freezer immediately after delivery.
- Meat should be stored in a refrigerator unit with a temperature range of 32-40° F.
- Frozen meats should be held at a temperature of 0° F or below.
- Processed meats like ham, bacon and luncheon meats, unless delivered frozen, should not be frozen.



Poultry, Egg and Dairy Storage



- Refrigerated poultry should be used within three days.
- Fresh eggs should be stored in their original containers in a refrigerator.
- Keep eggs refrigerated at or below 45° F.
- Washing eggs should not be done at the food service establishment.
- Dry eggs in the reconstituted form are considered potentially hazardous products.
- Dried egg products should be refrigerated or kept in a cool, dry place , away from light.
- After egg product packages are open, store in a refrigerated space.
- Keep frozen egg products frozen and thaw in the refrigerator.
- Liquid egg products should be refrigerated before and after the package is open.
- Keep dairy products tightly covered and store away from foods with strong odors such as fish, peaches, onions and cabbage.
- Milk, cottage cheese and cream should not be used after the date marked “sell by” or “good until” on the carton or delivery container.
- Keep milk stored in a refrigerator with an air temperature below 40° F.
- Dairy products should not be held at room temperature unless for cooking and then should not be at room temperature for more than two hours.
- Milk must be served in its original container or from a milk dispenser.

Fresh Fruit Storage

- Apples, avocados, bananas and pears ripen best at room temperature.
- Most fruits keep best in the refrigerator.
- Do not wash berries, cherries and plums before refrigeration - wash before preparation and/or serving.
- Citrus fruits are best stored at a cool room temperature -- ideally between 60-70° F.



Fresh Vegetable Storage

- Most vegetables are best kept refrigerated. The air temperature range for refrigeration should be about 40-45° F.
- Lima beans, cauliflower and cucumbers quickly spoil or lose flavor.
- Potatoes are best stored at an air temperature of 45-50° F while sweet potatoes, mature onions, hard-rind squashes, eggplants and rutabagas are best stored under refrigeration.

Vacuum Packaging Storage

- Vacuum packaging does not stop the growth of bacteria.
- Observe manufacturer's recommended temperatures for storage.

Canned Food Storage

- Follow general storage procedures for canned goods as for dry goods.
- The optimum storage temperature for canned goods is 50-70° F.
- Always wipe canned goods with a clean cloth before opening.

Baking Supplies and Grain Products Storage

Cereal and grain products attract pests and can easily become moldy and musty -- do not store for prolonged periods of time.

Milk Handling and Storage

1. Milk delivered at the proper temperature will stay fresh longer. Cold temperatures prevent the harmless bacteria that cause spoilage in milk from growing and producing undesirable off-flavors. The warmer the milk is allowed to get during deliveries, the longer it takes to cool it back down to proper storage temperatures. Milk should be received at 40° F or less.
2. Milk stays fresh and tastes best longest at these temperatures, and will often be of good quality beyond the sell-date if maintained cold. At warmer temperatures, spoilage bacteria are more likely to grow, shortening the practical shelf-life of the product. Always return unused containers or portions of milk promptly to the refrigerator. Store milk between 34° F and 38° F.



3. Odors from fruit, vegetables and/or unclean conditions can pass through milk containers and be absorbed into the milk. Citrus fruits stored in close proximity to milk are often to blame when “chemical-like” off-flavors are detected. Use separate, clean refrigerators or coolers or segregate milk from other foods that have strong odors.
4. Strong sunlight and fluorescent light can cause off-flavors in milk and can also destroy vitamins. Brief periods in the sun or relatively longer periods of artificial light can result in “plastic-like”, medicinal or flavors likened to burnt hair or feathers. Longer exposures may result in flavors that resemble old cooking oil or “wet-cardboard”. Riboflavin, vitamin A and other nutrients may also be degraded when milk is exposed to light.
5. Milk received first should be used first. Place new supplies at the rear of the refrigerator, so that stocks will be rotated properly and milk will not be held beyond its sell-by date. Though properly held milk should still be acceptable beyond the coded date, milk does not improve with age and will not be as fresh tasting.
6. A common complaint of both school children and adults is that warm milk tastes bad. Recommend milk in serving lines should be maintained below 40° F. At room temperature, half-pint cartons of milk can warm 10° in 20 minutes. Always return unused cartons or portions of milk promptly to the refrigerator.

How Long Will It Keep?

Product	Storage Period	
	In Refrigerator	In Freezer
Ground Beef	1-2 days	3-4 months
Steaks and Roasts	3-5 days	6-12 months
Bacon	1 week	1 month
Pork Chops	3-5 days	3-4 months
Ground Pork	1-2 days	1-2 months
Smoked breakfast links or patties	1 week	1-2 months
Hard Sausage -- pepperoni, jerky sticks	2-3 weeks	1-2 months
Pork Roasts	3-5 days	4-8 months
Ham, canned, unopened, kept refrigerated	6-9 months	Don't freeze
Ham, fully cooked - whole	7 days	1-2 months
Ham, fully cooked - half	3-5 days	1-2 months
Ham, fully cooked - slices	3-4 days	1-2 months
Lunch Meat	3-5 days	1-2 months
Sausage	1-2 days	1-2 months
Gravy	1-2 days	3 months
Lean Fish (i.e., cod)	1-2 days	up to 6 months
Fatty Fish (i.e., blue, perch, salmon)	1-2 days	2-3 months
Whole Chicken	1-2 days	12 months
Chicken Parts	1-2 days	9 months
Giblets	1-2 days	3-4 months
Swiss, Brick, Processed Cheese	1-2 days	*
Mayonnaise, commercial, refrigerate after opening	2 months	Don't freeze
Milk	5 days	1 month
Eggs, fresh in shell	3 weeks	Don't freeze
Raw egg yolks, whites	2-4 days	1 year
Eggs, hardcooked	1 week	Don't freeze
Eggs, liquid pasteurized eggs or egg substitutes, opened	3 days	Don't freeze
Eggs, liquid pasteurized eggs or egg substitutes, unopened	10 days	1 year
Hard-boiled	1 week	
Frozen Casseroles	Keep frozen until ready to heat and serve	3-4 months
Hotdogs, opened package	1 week	Don't freeze
Hotdogs, unopened package	2 weeks	1-2 months

*Cheese can be frozen, but freezing will affect the texture and taste.

Refrigeration/Freezer Temperature Log

Type of Device:			Location:		
Date	Time	Temperature	Corrective Action	Comments	Signature
Audited By:				Date:	

VI. PREPARATION

Thawing Potentially Hazardous Foods

When thawing foods, it is best to plan ahead and thaw food in the refrigerator where food will remain at a safe, constant temperature - -40°F or below.

Cooked, potentially hazardous foods should be cooled rapidly: within two hours from 140°F to 70°F , and within four hours from 70°F to 45°F . Foods should never be thawed on the counter or defrosted in hot water.



There are only four safe ways to thaw food:

- 1. Refrigerator Thawing:** Planning ahead is the key to this method because of the lengthy time involved. A large frozen item like a turkey requires at least 24 hours of thawing time for every 5 pounds of weight. Even small amounts of frozen food -- such as a pound of ground meat or boneless chicken breasts -- require a full day to thaw. When thawing foods in the refrigerator, there are variables to take into account:

Some areas of an appliance may keep the food colder than other areas. Food placed in the coldest part will require longer defrosting time.

Food takes longer to thaw in a refrigerator set at 35°F than one set at 40°F .

After thawing in the refrigerator, red meat should remain useable for 3-5 days after thawing and ground meat and poultry should remain useable for a day or two. Food defrosted in the refrigerator can be refrozen without cooking, although there may be some loss of quality.



- 2. Cold Water Thawing:** This method is faster than refrigerator thawing but requires more attention. The food must be in a leak-proof package or plastic bag. If the bag leaks, bacteria from the air or surrounding environment could be introduced into the food. Also, meat tissue can also absorb water like a sponge, resulting in a watery product.

The bag should be submerged in cold tap water, and the water should be changed every 30 minutes so that it continues to thaw. Small packages of meat or poultry -- about a pound -- may defrost in an hour or less. A 3-4 pound package may take 2-3 hours. For whole turkeys, estimate about 30 minutes per pound.

After defrosting, refrigerate the food or cook it promptly. Foods thawed by the cold water method should be cooked before refreezing.

- 3. Microwave Thawing:** When thawing food in the microwave, plan to cook it immediately after thawing because some areas of the food may become warm and begin to cook during microwave defrosting. Holding partially cooked food is not recommended because any bacteria present wouldn't have been destroyed and may have reached optimal temperatures for bacteria to grow. Food thawed in the microwave should be cooked before refreezing.

- 4. Cooking Procedure:** Food may be thawed as part of any cooking procedure as long as the product reaches its recommended minimum internal cooking temperature. For example, frozen hamburger patties can go straight from the freezer onto the grill without being thawed first.



Proper Cooling of Potentially Hazardous Foods

Foods should be cooled quickly if they are to be re-served. Use one of these methods to properly cool potentially hazardous foods:



1. Use shallow storage containers.
2. Divide into smaller containers.
3. Use approved ice-filled plastic wands to stir the product.
4. Place foods in a blast chiller.

TIP: Potentially hazardous foods should be cooled within four hours to 45 ° F or less if prepared from ingredients at ambient temperature, such as reconstituted foods and canned tuna. Prepared from ingredients at ambient temperature means, for example, making tuna fish salad from canned tuna fish stored at room temperature. Because the product (canned tuna fish) was at room temperature, the potential for bacterial growth is greater in a warm environment, therefore, the prepared product must be cooled rapidly (within four hours to 45 ° F.)

Preventing Contamination During Preparation and Cooking

Microorganisms can move easily in a kitchen. They can attach themselves to almost anything they come into contact with, including prep tables, equipment, utensils, cutting boards, dish towels, sponges, hands, or other foods. When you know what it is and how it happens, cross-contamination is fairly simple to prevent. Prevention starts with creating physical or procedural barriers between food products.

- Prepare raw meats, fish, and poultry in separate areas from produce or cooked and ready-to-eat foods.
- Assign specific equipment to each type of food product. Color-coded utensils are useful for doing this.
- Use specific containers for each type of food product.
- Clearly label containers with the intended contents.
- Clean and sanitize all work surfaces, equipment, and utensils after each task. Wiping surfaces isn't enough -- they must be thoroughly cleaned and sanitized after each task.
- Cloths or towels used for wiping food spills must not be used for any other purpose. Use disposable or color-coded towels to prevent cross-contamination.
- Make sure employees watch what they touch after handling raw animal foods and remind them to practice good personal hygiene.
- Clean and sanitize thermometer stems after each use.
- Use cleaned and sanitized utensils to handle food after cooking. Never reuse utensils that have contacted raw animal foods to handle cooked foods.
- Taste foods correctly. Ladle a small amount into a small dish. Taste the food with a cleaned and sanitized or single-use spoon, then remove the dish and spoon from the area to be cleaned and sanitized.
- Never taste directly from the dish that is to be served and never reinsert a utensil into the serving dish after you have tasted.
- Only take out of refrigeration as much food as can be prepared in a short period of time (about 20 minutes).



- Ensure that food does not sit out in the danger zone for long periods of time during preparation and remind employees to prepare food in small batches.
- If employees are interrupted while preparing food, make sure your employees put the food into refrigeration until they are ready to continue preparing it.
- Chill mixing bowls and utensils if needed to assist in keeping foods cold.

Cross-Contamination

Cross-contamination is one of the most common causes of foodborne illness. It is the transfer of bacteria from food to food, hand to food, or equipment to food. Cross-contamination usually occurs when raw, contaminated ingredients are added to foods, or because fluids from raw foods can drip into foods that receive no further cooking. Example: Thawing meat on a top shelf in the refrigerator where it can drip onto prepared foods stored below.



Bacteria found throughout the body often ends up on our hands where they can easily spread to food. People can also pick up bacteria by touching raw food, then transfer it to cooked or ready-to-eat food. Equipment can transfer contamination if it is used on contaminated food and then used to prepare other food without proper cleaning and sanitizing. Example: surfaces used for cutting raw poultry are used to cut foods that will be eaten raw, such as fresh vegetables.

Food Temperatures

One of the single most important steps in food preparation is adequately controlling food temperatures. Disease-causing bacteria rapidly multiply when food temperatures are between 45° F and 140° F - the Temperature Danger Zone. **NOTE:** The total accumulated time potentially hazardous foods are exposed to the Temperature Danger Zone (including transport, storage, handling, preparation and serving) must not exceed four hours.

The final cooking temperatures are the minimum safe internal temperatures for various hot foods. Thermometers should be used to check the internal temperature of hot foods before the end of the cooking process.



1. Use a calibrated digital thermometer or a metal-stemmed and numerically scaled thermometer, accurate to $\pm 2^{\circ}$ F.
2. Never use a glass thermometer.
3. Check the internal temperature in several places, especially the thickest part.

Internal Temperature Guide

Product/Instruction	Safe Temperature
Temperature danger zone for bacterial growth	41 ° F to 140 ° F
Amount of time food can stay safety in the danger zone	4 hours
Minimum amount of time recommended for handwashing	20 seconds
Required internal product temperature for refrigerated food	41 ° F
Ideal temperature range for dry storage	50 ° F to 70 ° F
Distances food should be stored above the floor and away from the wall	6 inches
Required minimum internal product temperature for frozen foods	0 ° F
Information that should be included with products when delivered and stored	Product label/Date/Time
Temperature of water for thawing food	70 ° F or lower
Minimum internal hot product temperature for poultry, stuffed meats, and stuffed pastas	165 ° F for 15 seconds
Minimum internal product temperature for reheated food	165 ° F for 15 seconds (must be heated to this temperature within 2 hours)
Minimum internal product temperature for fish, beef, pork, and lamb (pieces, not ground)	145 ° F for 15 seconds
Minimum internal hot product temperature for ground beef, ground pork and eggs	155 degrees F for 15 seconds
Minimum internal hot product temperature for fruits and vegetables cooked for hot holding	140 degrees F for 15 seconds
Minimum internal hot product temperature for reheated ready-to-eat foods taken from a commercially processed container or package	140 degrees F for 15 seconds
Minimum internal product temperature for hot-holding potentially hazardous food	140 degrees F
Maximum times and temperature ranges for cooling hot food	Cool to 70 ° F within 2 hours and then to 41 ° F within 4 hours
Food that is cooked, cooled, and reheated	165 ° F for 15 seconds
Food that is reheated in a microwave oven	165 ° F and hold for 2 minutes after removing from microwave oven

Safety Versus Doneness

Many food handlers believe that visible indicators, such as color changes in the food, can be relied on to determine that foods have been cooked to an endpoint that ensures bacterial destruction. However, recent research has shown that color and texture indicators are not reliable. For example, ground beef may turn brown before it has reached a temperature at which bacteria are destroyed. A consumer preparing hamburger patties and depending on visual signs to determine safety by using the brown color as an indicator is taking a chance that pathogenic microorganisms may survive. A hamburger cooked to 160° F, regardless of color, is safe.

The temperature at which different pathogenic bacteria are destroyed varies, as does the “doneness” temperature for different meat and poultry products. A roast or steak that has never been pierced in any way during slaughter, processing, or preparation and has reached an internal temperature of 145° F is safe to eat. A consumer looking for a visual sign of doneness might continue cooking it until it was overcooked and dry. A consumer using a thermometer can feel reassured the food has reached a safe temperature.

Likewise, poultry should reach at least 160° F throughout for safety, but at this temperature the meat has not reached a traditional “done” texture and color (the red color of poultry does not change to the expected cooked color of white until temperatures are well above 160° F), and many consumers prefer to cook it longer to higher temperatures.

A thermometer should also be used to ensure that cooked foods are held at a safe temperature (below 40° F or above 140° F) until served.

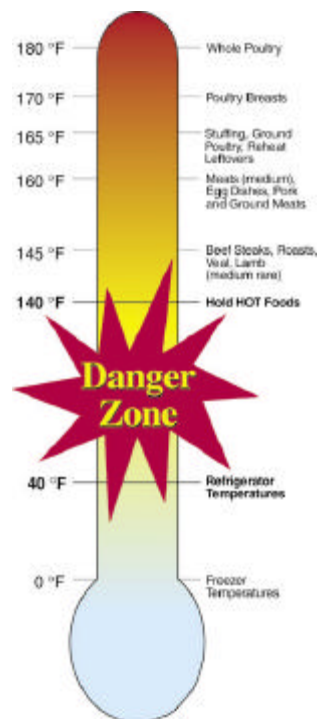
Thermometers

Using a thermometer is the only reliable way to ensure safety and determine the “doneness” of most foods. To be safe, a product must be cooked to an internal temperature high enough to destroy any harmful bacteria that may have been present in the food.

“Doneness” refers to a food being cooked to the desired state, and applies to the sensory aspects of foods such as texture, appearance, and juiciness. Unlike the temperatures required for safety, these sensory aspects are subjective.

Kitchen Thermometers

One of the most critical factors in controlling bacteria in food is controlling temperature: pathogenic microorganisms grow very slowly at low temperatures, multiply rapidly in mid-range temperatures, and are killed at high temperatures. For safety, foods must be held at proper cold temperatures in refrigerators or freezers and they must be cooked thoroughly. It is essential to use a thermometer when cooking meat and poultry to prevent undercooking and, consequently, prevent foodborne illness.



Thermometer Care

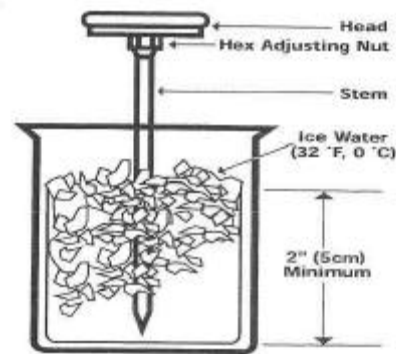
- As with any cooking utensil, food thermometers should be washed with hot, soapy water. Most thermometers should not be immersed in water, but should be washed carefully by hand.
- Use caution when using a food thermometer. Some models have plastic faces, which can melt if placed too close to heat or dropped in hot liquid.
- Thermometer probes are sharp and should be stored with the probe in the stem sheath. Some glass thermometers are sensitive to rough handling and should be stored in their packaging for extra protection or in a location where they will not be jostled.

Calibrating a Thermometer

There are two ways to check the accuracy or calibration of a food thermometer, but you should always follow the manufacturer's instructions:

1. **Ice Water:** To use the ice water method, fill a large glass with finely crushed ice, add clean tap water to the top of the ice, and stir well. Immerse the thermometer stem a minimum of 2 inches into the mixture, touching neither the sides nor the bottom of the glass. Without removing the stem from the ice, hold the adjusting nut under the head of the thermometer with a suitable tool and turn head so pointer reads 32° F. Allow a minimum of 30 seconds before adjusting.
2. **Boiling Water:** To use the boiling water method, bring a deep pan of clean tap water to a full rolling boil. Immerse the stem of a thermometer in boiling water a minimum of 2 inches and wait at least 30 seconds. Without removing the stem from the pan, hold the adjusting nut under the head of the thermometer with a suitable tool and turn head so the thermometer reads 212° F. Remember that water boils at a lower temperature in a high altitude area.

If the thermometer cannot be calibrated, it should still be checked for accuracy using either method. Any inaccuracies can be taken into consideration when using, or the thermometer can be replaced. For example, if the thermometer reads 214° F in boiling water, subtract 2 degrees from the temperature registered when taking a reading in food.



Using a Thermometer

Most thermometers available will give an accurate reading with in 2-4° F. The reading will only be helpful, however, if the thermometer is placed in the proper location in the product. If not inserted correctly, or if the thermometer is placed in the wrong area, the reading will not accurately reflect the internal temperature of the product. In general, the thermometer should be placed in the thickest part of the food, away from bone, fat, or gristle.

Read the manufacturer's instructions. The instructions should tell how far the thermometer must be inserted in a food to give an accurate reading. If instructions are not available, check the stem of the thermometer for an indentation or dimple, that shows one end of the location of the sensing device. Most digital thermometers will read the temperature in a small area of the tip. Dial types must penetrate about 2-3 inches into the food.

- When taking the temperature of beef, pork or lamb roasts, the thermometer should be placed midway in the roast, avoiding the bone.
- When cooking hamburgers, steaks, or chops, insert a thermistor or thermocouple in the thickest part, away from the bone, fat or gristle.
- When cooking whole poultry, the thermometer should be inserted into the thickest part of the thigh.
- If stuffed, the center of the stuffing should be checked after the thigh reads 180° F (stuffing must reach 165° F).
- If cooking poultry parts, insert thermometer into the thickest area, avoiding the bone. The thermometer may be inserted sideways if necessary.
- When the food being cooked is irregularly shaped, the temperature should be checked in several places.
- When measuring the temperature of a thick food, such as a hamburger patty or chops, a thermistor or thermocouple thermometer should be used.
- A dial bimetallic-coil thermometer averages the internal temperature along the length of the sensor within its probe. Thin foods usually cannot accommodate the 2-inch probe if it is inserted from top to bottom, and thus, it will not give an accurate reading. For thin foods, the bimetal

TYPES OF THERMOMETERS	SPEED	PLACEMENT	USAGE CONSIDERATIONS
LIQUID-FILLED	1 to 2 minutes	At least 2 inches deep in the thickest part of the food	<ul style="list-style-type: none"> • Used in roasts, casseroles, and soups • Can be placed in a food while it is cooking • Cannot measure thin foods • Calibration cannot be adjusted • Possible breakage while in food • Heat conduction of metal shield can cause false high reading
BIMETAL (oven-safe)	1 to 2 minutes	2 to 2 1/2 inches deep in the thickest part of the food.	<ul style="list-style-type: none"> • Can be used in roasts, casseroles, and soups • Can be placed in a food while it is cooking • Not appropriate for thin foods • Heat conduction of metal stem can cause false high reading
BIMETAL (instant-read)	15 to 20 seconds	2 to 2 1/2 inches deep in the thickest part of the food	<ul style="list-style-type: none"> • Can be used in roasts, casseroles, and soups • Use to check the internal temperature of a food at the end of cooking time • Can be calibrated • Cannot measure thin foods unless inserted sideways • Cannot be used in an oven while food is cooking • Temperature is averaged along 2-3" of probe • Readily available in stores
THERMISTOR (digital)	10 seconds	At least 1/2 inch deep in a food	<ul style="list-style-type: none"> • Gives faster reading • Can measure temperature in thin foods • Digital face easy to read • Cannot be used in an oven while food is cooking • Available in "kitchen" stores
THERMOCOUPLE (digital)	5 seconds	1/4 deep, or deeper, as needed	<ul style="list-style-type: none"> • Fastest • Can quickly measure even the thinnest foods • Digital face easy to read • Can be calibrated • More costly, may be difficult for consumers to find in stores



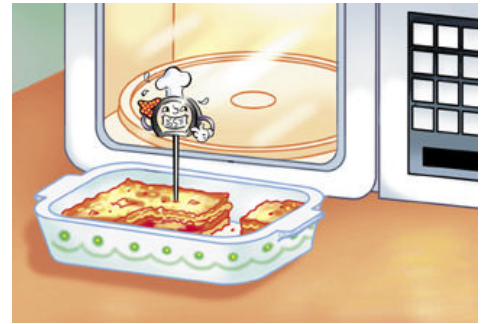
thermometer may be inserted sideways so that it will average the temperature in the center of the food. To avoid burning fingers, it may be helpful to remove the food from the heat source (if cooking on a grill or in a frying pan) and insert the thermometer sideways after placing the item on a clean spatula or plate.

- For casseroles and other combination dishes, place the thermometer into the thickest portion of the food or the center of the dish.
- Egg dishes, and dishes made using ground meat and poultry, should be checked in several places.

Microwave Cooking

When cooking with a microwave, follow these steps:

1. Microwave cooked food should be heated an additional 25° F or higher than conventional oven product cooking temperatures.
2. Rotate and stir food during cooking so that it heats evenly.
3. Cover food to retain surface moisture.
4. Allow food to stand covered for two minutes after cooking to obtain an even temperature. Follow manufacturer's instructions for stand time for more thorough heating. In the absence of manufacturer's instructions, at least a two minute stand time should be allowed.



VII. Holding

Cold Holding

Improperly holding foods may cause them to become unsafe and make customers ill. Practicing the proper methods for keeping food cool during cold holding, delivery and catering is an important part of keeping food safe.



To ensure food is safe and cool while being cold-held:

- Use only cold-holding equipment that can keep food cool at 41° F or lower.
- Measure the internal temperature of food being held every two hours. If the food is not at 41° F, take corrective action, such as discarding the food.
- Use covers or wrappers to retain food temperatures.
- Place cold food in chilled gel-filled containers or in bowls on ice if mechanical equipment is not available or practical.
- Rotate or stir food to maintain a constant temperature.

Hot Holding

To ensure food is safe and hot while being hot-held:



- Holding equipment should be preheated or pre-chilled to maintain the correct temperature.
 - Use hot holding equipment, such as steam tables and holding cabinets during service but never for preparing or reheating. (**NOTE:** Some schools are now buying food warming equipment that can be used for preparation).
 - Stir foods at reasonable intervals to ensure the even retention of heat.
 - Check temperatures with a food thermometer repeatedly every 30 minutes. Sanitize the thermometer before each use. Use an alcohol wash if available.
 - Monitor the temperature of hot holding equipment with each use.
 - Discard any food held in the Danger Zone for more than four hours. Do not reheat and serve.
- If hot foods are held between 41° F and 140° F for less than four hours, they should be reheated to 165° F before serving.
 - To avoid possible contamination, never add freshly prepared food to a serving pan containing foods that are already being served.

Off-Site Feeding

1. Food should be properly cooked.
2. Food should be placed in a clean food container and protected from cross-contamination.
3. Check hot food temperature: hot foods should be at least 165° F when placed in the hot holding units, then maintained at 140° F during transport.



4. Check cold food temperature frequently: cold food should be maintained at 41 ° F or below during transport.
5. All food temperatures must be recorded. Write down the temperature of the food and the time that the temperature is taken on a temperature log sheet.
6. Send a copy of the temperature log sheet with the food.
7. Hot and cold food holding units used for transportation should be in good working condition to keep all foods at proper temperature.
8. The transportation vehicle must be clean and working properly.
9. Food must be secured when placed in the vehicle and no food can be stored on the floor (place food on pallets a minimum of four inches off the floor of the vehicle.)
10. Food is not allowed to be in the Danger Zone for more than four hours.
11. If serving utensils are sent along with the food, utensils must be protected from cross-contamination. Place utensils in a separate container such as a sealed plastic bag or carrying case so that utensils are not exposed to air or the environment.
12. Prior to food arriving, prepare steam tables or other hot holding units and cold holding units.
13. When the transport vehicle arrives at the school, check the food temperature log sheet.
14. Recheck food temperatures stored in hot and cold holding units before placing in serving units.
15. Serve food as soon as possible.

Transporting Food Safely

Hazards	Preventive Measures	Control Limits	Monitoring	Corrective Action
<ul style="list-style-type: none"> Growth of harmful bacteria and formation of toxin Cross-contamination 	<ul style="list-style-type: none"> Use insulated containers to reduce heat loss. Delivery person has received appropriate training Use clean vehicle. 	<ul style="list-style-type: none"> Keep at proper temperatures Train delivery person in personal hygiene Clean vehicle. 	<ul style="list-style-type: none"> Periodic check of food temperatures. Observe work of delivery person. Visual check of vehicle. 	<ul style="list-style-type: none"> Readjust and modify delivery system for acceptable temperatures. Discard food if hot food is kept outside of optimum temperatures. Discard food if cold food is kept outside of optimum temperatures for more than 2 hours. Retrain delivery person Clean and repair delivery vehicle.

Food Temperatures Inspection Log (Steam Table/Hot Holding Unit)

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VIII. SERVING

Preventing Cross-Contamination While Serving

The job of preventing foodborne illness continues even after food has been properly prepared and cooked since microorganisms still have many chances to contaminate food before it is eaten. Common sense rules apply when protecting food from cross-contamination during service.

Employees and customers do many things without thinking which can lead to food contamination and so procedures should be in place in order to provide guidance to customers and employees on proper handling techniques.



- Keep food covered with lids or use food shields.
- Never mix freshly prepared food with food already being held.
- Most foods should not be stored on ice. Place foods in pans or on plates first to avoid contact with ice.
- Be sure to clean and sanitize thermometer stems between uses.

Kitchen staff should:

- Store serving utensils properly. They can be stored in the food, with the handle extended above the rim, or placed on a clean and sanitized plate or other food contact surface.
- Serving utensils should have long handles that will help keep employee's hands away from the food.
- Always use cleaned and sanitized utensils for serving. Also, remember that utensils should be used for only one food and must be properly cleaned and sanitized after each task.
- Minimize handling cooked and ready-to-eat foods with bare hands.
- Always practice good personal hygiene.



Servers should:

- Handle glassware and dishes properly. Never touch the food-contact area of plates, bowls, glasses, or cups.
- Never stack glasses or dishes when serving.

- Hold flatware and utensils by the handles, never by the food-contact surfaces.
- Cloths used for cleaning food spills should not be used for anything else.
- Store cloths in either cleaning or sanitizing solution at the correct concentration between uses.
- Always practice good personal hygiene.

Preventing Cross-Contamination in Customer Self-Service Areas



Customers at food bars often unknowingly serve themselves in ways that can put themselves and other customers in danger. Buffets and food bars should be monitored by employees trained in food safety procedures. Assign a staff member to replenish food and to hand out fresh plates for return visits. These types of practices will do a lot to keep self-service areas more sanitary.

Self-service monitors should:

- Ensure that sneeze guards or food shields are properly placed above food.
- Ensure that all food items are properly identified to avoid taste-testing by customers.
- Keep raw foods separate from cooked and ready-to-eat foods.
- Make sure that customers do not use soiled plates or silverware for return trips and do not touch food with personal utensils.
- Make sure that customers do not eat on the line.

Leftovers

It is often necessary to prepare foods in advance or incorporate leftover foods. Unless proper precautions are taken, this practice can easily lead to problems. In fact, foods prepared in advance and using leftovers are the primary opportunities for foodborne illness. Two key precautions for preventing food-borne illness during this practice are rapid cooling and protection from contamination. All cooked leftovers should be chilled to an internal temperatures of below 40° F.



Quick-chill any leftovers larger than ½ gallon or two pounds. Quick chilling involves these simple steps:

1. Reduce the food mass. Divide large quantities of food into several smaller containers.
2. Chill. Ideally, place food in an ice-water bath or quick-chill unit (26° F to 32° F) rather than a refrigerator. This is best because water is a much better conductor than air, and because refrigeration units are designed to keep foods cold rather than to chill hot foods. It can take too long to cool foods to safe temperatures.
3. Stir frequently. Stirring accelerates cooling and helps to ensure that cold air reaches all parts of the food.
4. Measure temperature periodically. Food should reach a temperature of 70° F within two hours and 40° F within four hours. It is important to note that this time must be reduced if food has already spent time in the Danger Zone at any other point in the preparation and serving process.
5. If it appears that food will not cool to 70° F within two hours, reheat it to 165° F or higher for at least 15 seconds within two hours. Then serve food or immediately begin the cooling process and use proactive means to speed cooling.

6. Tightly cover and label cooled foods. On labels, include preparation dates and times.
7. If potentially hazardous foods are held in the Danger Zone for more than four hours, discard them.

As in all phases of the food preparation process, you must be careful to avoid contamination when using leftovers. To safely reheat and serve leftovers, be sure to:

- Boil sauces, soups, and gravies and heat other foods to a minimum of 165° F within two hours of taking the food out of the refrigerator.
- Never prepare or reheat foods in hot-holding equipment.
- Never mix a leftover batch of food with a fresh batch of food.
- Never reheat food more than once.
- Discard leftovers that have been refrigerated for more than the recommended time. Refrigerated, ready-to-eat, potentially hazardous foods that are prepared and held for more than 24 hours must be used within 7 days or less if food is held at 41° F or lower, or four days or less if held at 45° F or lower, from the date the foods were prepared.



IX. Facility and Equipment Sanitation

Five Steps to General Cleaning

1. **Remove Debris:** Ensure that all large debris is cleared from the area.
2. **Rinse:** If your operation has a floor drain, hose down (with water) any remaining small particles of fish, meat, poultry, vegetables, milk or egg liquids. This prepares the surfaces for the next step. Take care to avoid spraying water directly on motors and other electrical equipment. Disassemble all equipment before cleaning. A thorough rinse with cold or tepid water will make the next step more effective. Remember, some proteins coagulate at 140°F to 145°F. Never use excessively hot water or steam; this would bake the protein onto equipment much as an egg sticks to an ungreased frying pan.



In most states, restaurants and institutions are required to have a three- or four-compartment sink. The first compartment is used to rinse off large particles of adhering soil. The second compartment is used to apply the detergent in 120° to 140°F water. The third compartment is used to rinse and the fourth to sanitize. Brush or agitate in some manner equipment that has been disassembled to facilitate removal of debris. Detergents are manufactured to do specific jobs. Therefore, make a decision on whether to use low foaming versus high foaming or alkaline versus acid detergent when consulting with the manufacturer's representative. Base your decision on:

- the soil type (fat, protein, raw, baked on, chemical scale, etc.)
 - the surface to be cleaned (solid, mesh, stainless, galvanized, etc.)
 - quality of water (hard, soft)
 - method available for cleaning (spray, foam, manual, etc.)
 - cost (plant personnel, contract)
3. **Detergent Application:** Some operations are equipped with high-pressure sprayers through which detergent is metered. The loosening action of the detergent, together with the high water pressure, removes the residue from the equipment surfaces. Another method of applying detergent is by foaming it on the equipment and allowing it to work for a few minutes prior to the next step of rinsing. Certain pieces of equipment need to be cleaned manually using brushes, steel pads, etc.
 4. **Rinse:** After applying detergent by high-pressure spray, soak tank or foaming, rinse the equipment with clean potable water. It is extremely important that all detergent residue is completely rinsed off since very small amounts of detergent in food can cause stomach and intestinal disorders similar to the symptoms of food poisoning. In a restaurant or institution, the third compartment of the sink is used for rinsing. Water for rinsing should be 180°F.



5. Sanitize: There are several general classes of sanitizers. These include:

- Halogens -- chlorine, iodine, and bromine
- Phenols
- Quaternary Ammonium Compounds

Consider the following items when selecting a sanitizer for your particular operation:

- The length of time the sanitizer will be in contact with the surface to be sanitized. If you are going to soak the equipment, then the rate of sanitizing action is relatively unimportant.
- The temperature at which the sanitizer will be used. For example, in the case of chlorine, as the temperature is increased, chlorine is less effective.
- The amount of organic material (fats, proteins, vegetable materials, etc.) present in or on the equipment to be sanitized. If the equipment to be sanitized contains many particles of organic matter in addition to bacteria, the sanitizer will concentrate on the organic particles and combine with them rather than the much smaller bacteria. On the other hand, if the equipment is relatively clean and if bacteria comprise the majority of the particulate matter on the equipment, then the sanitizer will be more effective.
- The cost of the sanitizer. No matter how efficient a sanitizer may be, its cost may limit its application. Before selecting a sanitizer, review all considerations in order to determine the most economical one to use for a particular job.
- The sanitizer's pH. It is important to know the pH of the solution in which the sanitizer will be expected to act. Again, using chlorine as an example, we find that the lower the pH, the more effective chlorine is as a sanitizing agent.
- Determination of the Phenol Coefficient. The bactericidal effectiveness of a chemical sanitizer can be measured by determining its Phenol Coefficient. This value is obtained by comparing the sanitizer's activity with a pure Phenol. A Phenol is a highly toxic agent to all bacteria under carefully standardized conditions. The test is made by separately mixing various concentrations of Phenol and sanitizer with known numbers of bacteria. After a specific time limit, the solutions are compared for total kill. The highest dilution of the test sanitizing solution that kills all the organisms in ten minutes is divided by the highest dilution of Phenol giving the same results, to give the Phenol Coefficient (P). For example, if the highest dilution of the test solution that gives 100 percent kill in ten minutes is 1-500 and for Phenol, 1-100, the Phenol Coefficient is $P = \frac{500}{100} = 5$. Phenol Coefficients are calculated by the manufacturers of sanitizers in order to determine recommended concentrations for use in solution. Thus, the higher the Phenol Coefficient, the more effective that particular sanitizer is in killing bacteria. With a tremendous number of detergents and sanitizers now being marketed and with some new product being introduced every day, there are innumerable formulations of cleaning compounds from which to choose.

Almost every cleaning job has a detergent designed to handle it. We must become familiar with the proper use of detergents for various jobs. Any cleaning compound used on product contact surfaces or in processing areas should be approved by USDA. The United States Department of Agriculture Consumer and Marketing Service, Consumer Protection Programs, Technical Service Division, publishes a list alphabetized by company of chemical compounds that are approved for use in food operations. Although this list was compiled for food processors manufacturing products under USDA Poultry, Meat, Rabbit, and Egg Products Inspectors Programs, it could be used as a guide for the safe use of detergents and sanitizers in any food related situation. It can be obtained from: United States Government Printing Office, Superintendent of Documents, Washington, D.C. 20402



Dip utensils, equipment parts, etc., in a chemical solution or in 180°F water for 30 seconds to complete the sanitizing process. Sanitize stationary equipment by use of a small pump sprayer in a small plant or by use of a high-pressure sprayer in a larger facility. A small hand held spray type bottle may be used in a restaurant for table sanitizing. Probably the most generally used sanitizer is chlorine. The ability of any sanitizer to inactivate or kill microorganisms is dependent upon the germicidal action of the sanitizer itself (i.e., its selectivity and concentration, the length of time during which the sanitizer is in contact with the surface being sanitized, the number and

characteristics of the microflora present, the temperature, the pH and the amount of organic matter and other incompatible materials, such as mineral deposits). The greater the number of microorganisms present, the more difficult it is to effectively remove them. Certain sanitizers are more effective or have a greater germicidal action than others. For instance, chlorine can be purchased in the form of sodium hypochlorite in 5, 11, and 15 percent solutions. Naturally, less quantity of the 15 percent solution is needed than that of the 5 percent solution. If mineral deposits, milkstone or other incompatible materials are present on the surface, sanitizers cannot penetrate to the bacteria and therefore, the cost of the sanitizers is wasted. You cannot sanitize dirt.

When choosing a sanitizer, take care to determine the surface makeup of the equipment that is to be sanitized. If chlorine is used in high concentrations on stainless steel equipment, pitting of the equipment will eventually occur since chlorine in solution forms an acid. Likewise, the use of iodophores on belts and other pieces of equipment that can absorb sanitizers tend to stain the equipment. Do not use phenols in food processing plants. The odor of a phenol can penetrate food materials, causing undesirable flavors and odors in the food. They are at times used in restrooms, and it is difficult to determine whether or not the restroom has been cleaned or the phenol compound has simply been spilled in the area masking the odor of a restroom. Quaternary ammonium compounds (QUATS) have a use in food processing plants. However, their use has been limited due to the cost of these compounds.

Cleaning Agents

Cleaning agents go a long way toward removing soil and microorganisms from surfaces. Be sure employees are using the correct cleaning agent for the type of soil present. The four types of cleaning agents are:

1. **Detergents:** These mild to highly-alkaline cleaners penetrate and remove soil from surfaces.
2. **Solvent Cleaners:** Often called degreasers, these alkaline detergents work well in areas where grease is found.
3. **Acid Cleaners:** These cleaners remove mineral deposits, scale and rust stains.
4. **Abrasive Cleaners:** These cleaners contain a scouring agent and are used to scrub off hard-to-remove soils.



Using a Three-Compartment Sink

1. Sink 1 is used for scraping, pre-washing and washing.
2. Sink 2 is used for rinsing.
3. Sink 3 is used for sanitizing. Always sanitize according to the manufacturer's instructions.

Sanitizing is the application of heat or chemicals that will kill most harmful bacteria. You should first clean the equipment and utensils and use a manual dishwashing procedure. This requires the use of a three-compartment sink.

Step 1: Wash equipment in a warm detergent solution (mixture of soap or cleaning agent and warm water between 75° F and 110° F) in the first compartment to remove all food and soil residue.

Step 2: Rinse in warm, clean water (between 75° F and 110° F) in the second compartment to remove all traces of the detergent.

Step 3: Sanitize by applying heat or chemical to the cleaned equipment. When using heat, immerse equipment for at least 30 seconds in clean, hot water maintained at a temperature of 171° F or above. An auxiliary heat source, such as a heating unit or heating coil installed in the third compartment to maintain the water at 171° F must be provided. When using chemicals, soak the equipment or utensils for at least one minute in a sanitizing solution (a mixture of either a chlorine-based, an iodine-based, or a quaternary ammonium-based compound) with the warm rinse water (75° F to 110° F).



If you use a chemical heat chlorine solution (a solution of at least 50 parts per million of available chlorine at a temperature of not less than 75° F), follow the directions for mixing the compound with water to obtain the proper concentration as printed on the product label. Part per million is a measurement of the concentration of the chlorine-based product in the water, which can be measured with test strips provided by the chemical vendor.

If you use an iodine solution (at least 12.4 parts per million of available iodine having a pH not higher than 5.0 and a temperature of not less than 75° F, follow directions for mixing the iodine with water to obtain the proper concentration as printed on the product label.

If you use a quaternary ammonium compound solution (a solution at a concentration as indicated by the manufacturer's use directions in the labeling statement, at a temperature of not less than 75° F, and in water with 500 milligrams per liter hardness or less), follow directions for mixing the quaternary ammonium compound with the water to obtain the proper concentration as printed on the label. Hardness is a measurement of calcium and magnesium carbonates and bicarbonates and calcium sulfate, calcium chloride, magnesium sulfate and magnesium chloride compounds dissolved in the water. The hardness is determined by a test performed by an analytical laboratory.

Cleaning Fixed Equipment

- Be sure to use proper solutions for food-contact surfaces and nonfood-contact surfaces.
- Color code buckets and use different cloths for each job.
- Be sure that equipment is unplugged and that your hands are dry.
- Clean non-food surfaces first and air dry.
- Wash, rinse and sanitize food contact surfaces and air dry.
- Replug and test.
- Unplug and set controls to 0.
- If equipment must be transported, move it without touching food contact surfaces.
- Store cups, pitchers, etc., upside down.
- If there are spills, clean the floor immediately with an appropriate cleanser and mop the floor with hot water.
- Secure with signs or cones.

Using a Dish Machine

1. Check that the machine is clean inside and out.
2. Check wash and rinse tanks for clear water.
3. Make sure spray arms are clear.
4. Check detergent level.
5. Pre-wash, scrape and soak tableware and utensils.
6. Separate flatware.
7. Load, but don't overload.
8. Make sure utensils and tableware don't nest or shield each other.
9. Don't interrupt the machine cycle.
10. Check temperature or chemical for proper concentration (180° F for final rinse).
11. Air dry.

Mechanical Dishwasher Using Hot Water as the Sanitizing Agent

1. The wash water solution temperature should be at least 150° F.
2. The rinse water temperature should be at least 140° F.
3. The final rinse water temperature as it leaves the manifold should be between 180° F (minimum) and 194° F (maximum).

Mechanical Dishwasher Using Chemicals as the Sanitizing Agent

1. The temperature of the wash solution should not be less than 120° F.
2. The temperature of the rinse water should not be less than 120° F.
3. The chemical concentration in the final rinse water should be:
 - a. Chlorine: at least 50 ppm at a temperature of not less than 75° F.
 - b. Iodine: at least 12.5 ppm at a temperature of not less than 75° F and a pH not higher than 5.0.
 - c. Quaternary ammonium compound: at a concentration recommended by the manufacturer, at a temperature of not less than 75° F, and in water with 500 mg/l hardness or less.

IMPORTANT: If the mechanical dishwasher does not operate or if the temperatures cannot be met, implement the manual (three-compartment sink) method to wash, rinse and sanitize utensils, or use completely disposable dishes and utensils.

Cleaning and Sanitizing Equipment Too Large for the Sink or Dishwasher

Equipment that cannot be put into a sink should be washed, rinsed and sanitized following these steps:

1. Unplug electrically powered equipment.
2. Remove any remaining food particles and scraps.
3. Wash, rinse, and sanitize any removable parts.
4. Wash the remaining food-contact surfaces and rinse with clean water. Wipe down with a chemical sanitizing solution mixed according to the manufacturer's directions.
5. Wipe down all non-food contact surfaces with a sanitized cloth, and allow all parts to air dry before reassembling.
6. Re-sanitize any external food-contact surfaces handled during reassembly.

If wooden surfaces such as cutting boards or countertops are present in your kitchen, scrub them with a detergent solution and a stiff-bristled brush. Rinse in clear, clean water and wipe down with a sanitizing solution.

Clean equipment using one of the following methods:

1. High pressure detergent sprayers.
2. Low or line pressure detergent foamers.
3. Other task-specific cleaning equipment.
4. Brushes or other implements.
5. The washed equipment should be thoroughly rinsed to remove the detergent residue.

Sanitize equipment using one of the following methods:

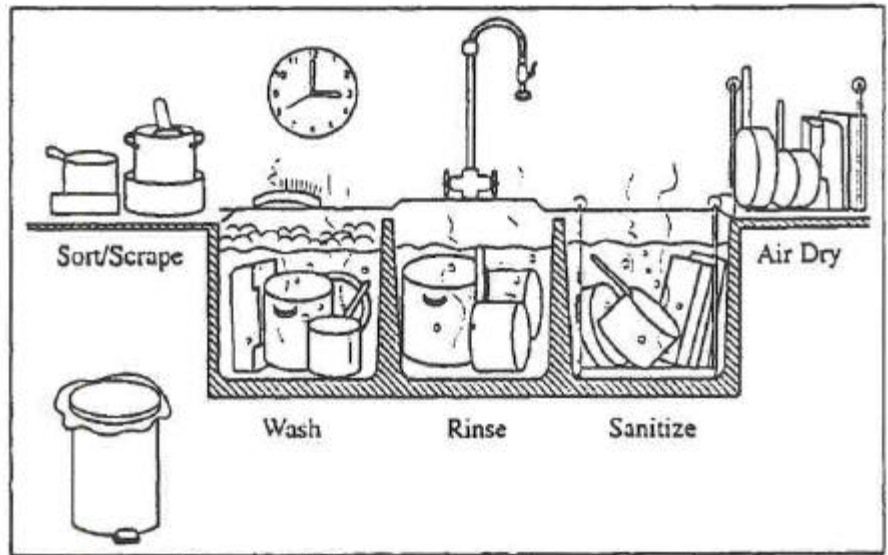
1. With live steam from a hose.
2. By rinse with boiling water.
3. By spraying or swabbing with a chemical sanitizing solution of at least twice the minimum strength required for the particular sanitizing solution when used for immersion sanitation.

Cleaned-in-Place Equipment (piping systems for liquids, large floor-mounted mixers and cutters, etc.)

1. Cleaning and sanitizing solutions should be able to circulate throughout the fixed system and contact all interior food contact surfaces.
2. The system should be self-draining or capable of being completely drained of cleaning and sanitizing solution.
3. For equipment not designed to be taken apart for cleaning, there must be inspection access points to ensure that interior food contact surfaces are effectively cleaned.

Sanitizing Portable Equipment and Utensils

To properly clean and sanitize portable equipment and utensils, your kitchen should be equipped with a three-compartment sink for cleaning, rinsing and sanitizing. There should be a separate area for scraping and rinsing food and debris into a garbage container or disposer before washing, and separating drain board for clean and soiled items.



- Clean and sanitize the sinks and work surfaces.
- Scrape and rinse food into garbage or disposal. Pre-soak items if necessary.
- In the first sink, immerse and wash the equipment in a detergent solution at about 120° F.
- Use a cloth or brush to loosen any remaining visible soil.
- In the second sink, rinse using clean, clear water between 120° F and 140° F to remove all traces of food, debris and detergent.
- In the third sink, sanitize by immersing items in hot water at 170° F for 30 seconds, or in a chemical sanitizing solution for one minute. Be sure all surfaces of the equipment are covered with hot water or the sanitizing solution and remain in contact with it for the appropriate amount of time.
- If soap suds disappear in the first compartment or remain in the second, if the water temperature cools, or if water in any compartment becomes dirty or cloudy, empty the compartment and refill it.
- Allow equipment to air dry. Wiping can re-contaminate equipment and can remove the sanitizing solution from the surfaces before it has finished working.
- Make certain all equipment is dry before putting it into storage to avoid retaining moisture that fosters bacterial growth.

Storage of Clean Equipment and Utensils

Storage of clean equipment and utensils should be arranged to protect the food contact surfaces from all sources of contamination. Equipment and utensils should always be stored in clean and dry areas. They should be off the floor to protect from dust and splashes, and away from sewer lines, water lines, and open stairwells.

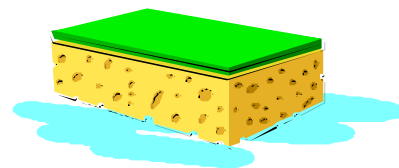


Between uses, utensils used to dispense food such as knives, ladles, and scoops should be stored either clean and dry, or in a running water dipper well, or in the food with the handle extending out of the food. Food dispensing utensils should always be free from contamination and cleaned and sanitized at regular intervals.

Wiping Cloths

All wiping cloths should be rinsed in an approved sanitizer. The least expensive and most common sanitizer for use with wiping cloths is a chlorine solution made by mixing 2 tablespoons or 1 oz. of bleach with 1 gallon of cool water. The solution should not contain soap. This concentration of bleach water is sufficient to kill bacteria on all food preparation surfaces. The sanitizing solution should not be confused with bleach water used for whitening of wiping cloths. The sanitizing solution should not be allowed to become dirty, changed frequently to maintain its effectiveness. Use chlorine test strips to check level (100 ppm).

- Cloths that are used for wiping spills should not be used for other purposes.
- Dry wiping cloths should be laundered as necessary to prevent contamination of food and food contact surfaces.
- Dry wiping cloths should be used for wiping spills from tableware and carrying out containers.
- Wet wiping cloths should be laundered in a sanitizing solution before being used.
- Wet wiping cloths, when not in use, should be stored in a chemical sanitizing solution at a strength mixed according to the manufacturer's directions.



Kitchen Cleanliness (Floors, Walls, Ceilings)



1. Floors, floor coverings, walls, wall coverings, and ceilings should be designed, constructed and installed so they are smooth and easily cleanable.
2. A floor covering such as carpeting may not be installed as a floor covering in food preparation areas, walk-in refrigerators, ware washing areas, toilet room areas with hand washing lavatories, where toilets and urinals are located, refuse storage rooms, or other areas where the floor is subject to moisture, flushing or spray cleaning methods.
3. Attachments to walls and ceilings such as light fixtures, mechanical room ventilation system components, vent covers, wall mounted fans, decorative items and other attachments should be easy to clean.
4. The physical facilities should be cleaned as often as necessary to keep the facility clean, and cleaning should be done during periods when the least amount of food is exposed (such as after closing).
5. Clean floors only with a dustless cleaning method, such as wet cleaning, vacuum cleaning, mopping with treated dust mops, or sweeping using a broom and dust-arresting compounds (cleaning compounds used to keep dust from flying).
6. Spills and drippage on floors that occur between normal floor cleaning times may be cleaned without the use of a dust-arresting compound and, in the case of liquid spills, with the use of small amounts of absorbent compound (such as sawdust or diatomaceous earth) applied immediately before spot cleaning.
7. Only use water-flush cleaning methods if the floor has a drain.

Contact Surfaces

All food contact surfaces including knives, cutting boards, meat slicers, and all other equipment and utensils for preparation or serving must be cleaned and sanitized after each use. For example, after slicing meats, all equipment and utensils should be sanitized before preparing vegetables. Sanitizing can be accomplished by using an approved dishwashing method or by using a clean wiping cloth that has been rinsed in a sanitizing solution.

1. Sanitize after each use.
2. Sanitize at opening and closing of business day.
3. Sanitize whenever contaminated.



Sample Facilities Cleaning Schedule

Area	Task	Frequency
Dumpster and Trash Areas	Keep trash containers covered. Sweep and scrub trash area	After every use Daily, at closing time
Landscaping	Pick up trash and debris	Daily, before opening and after every shift
Loading Dock	Sweep and scrub loading area Clean and scrub walls and surrounding areas	Daily, at closing time Weekly
Windows	Clean	Weekly
Parking Lot and Curbs	Sweep and pick-up trash and debris	Daily, before opening and after every shift
Sidewalks	Sweep and pick up trash and debris Scrub sidewalk entry	Daily, before opening and after every shift Weekly
Customer Traffic Areas	Clean	As needed or after every shift
Carpets	Vacuum Steam clean or shampoo	Daily, at closing As needed, but at a minimum every three months
Ceilings	Wash	Monthly
Chairs	Clean and sanitize seat Clean chair backs, rails and legs	After every use Weekly
Dining Tables	Clean and sanitize Clean table bases Remove gum from table bottoms	After every use Weekly Monthly
Display Cabinets, Non-food	Clean and sanitize surfaces Clean cabinet interior	At the end of each shift Weekly
Drains	Scrub drain covers Flush drains with disinfectant	Daily, at closing Weekly
Dry Storage Areas	Sweep and mop floors Clean shelves Scrub floors, baseboards and corners	Daily, at closing Weekly Weekly
Employee Areas	Clean and sanitize tables used for eating Sweep and mop, if applicable Clean employee lockers and storage areas	After every use At the end of each shift Weekly
Fans	Clean fan guards	Weekly
Floors	Spills Sweep Damp mop Scrub Strip and reseal	Immediately As needed or between shifts After each shift or rush Daily, at closing Every 6 months
Garbage Cans	Scrub clean and sanitize cans with hot water or steam and detergent	After emptying or daily at closing
Grease Traps	Pump out and clean	Monthly depending on size and type of trap
Hoods	Clean walls and exposed surfaces of hoods Clean removable filters Clean and degrease hood system	Daily, at closing Daily, at closing As needed, but at minimum every 3 months
HVAC System	Clean air intake and output ducts Check filters Clean ductwork	Weekly Monthly Yearly
Light Fixtures	Clean shields and fixtures	Monthly
Office Areas	Sweep and mop, if applicable Clean work surfaces	Daily, at closing Daily, at closing
Self-Service Condiment Areas	Clean spills and splashes Clean and sanitize surfaces Disassemble, clean and sanitize dispensers	Immediately At the end of each shift Daily, at closing
Upholstery	Vacuum or brush clean Steam clean or shampoo	Daily, at the end of each shift As needed, but at minimum every 3 months
Walls	Splashes Wash	As soon as possible Daily, at closing in prep and cooking areas and weekly in all other areas

Sample Equipment Cleaning Schedule

Area	Task	Frequency
Beverage Dispensing	Clean spills and splashes Clean out drain tray Disassemble, clean and sanitize dispenser spouts	As soon as possible At the end of each shift Daily at closing
Breath Guards	Clean spills and splashes Clean and sanitize all surfaces	As soon as possible At the end of each shift
Can Openers	Clean and sanitize	After each use or at the end of each shift
Carts and Transport Equipment	Clean spills and splashes Clean and sanitize shelves and racks Thoroughly clean and sanitize supports and exterior	As soon as possible Daily, after use Weekly
Clean-in-Place and Frozen Dessert Machines	Clean spills and splashes Clean out drain tray Disassemble, clean and sanitize mixing parts, interior surfaces and dispenser spouts	As soon as possible At the end of each shift Daily, at closing
Coffee and Tea Brewing	Clean spills and splashes Rinse baskets, urns and pots Disassemble, clean and sanitize spray heads and spouts Clean and brush urn, pots and baskets using a manufacturer recommended cleaner	As soon as possible After every use Daily, at end of shift Weekly
Deep Fryer	Clean outside surfaces Clean and filter grease Boil out fryers	At the end of each shift At the end of each shift Weekly
Food Mixers, Slicers and Processors	Disassemble, clean and sanitize equipment parts, surfaces and work tables	After each use or between each product change
Griddle, Chargrill, Broiler and Salamander	Clean and brush grill surfaces Clean surrounding surfaces and grease tray Clean cooking surfaces and backsplash Disassemble and clean burners and trays	As needed or at the end of each shift At the end of each shift Daily, at closing Weekly
Hot Holding and Proofing Cabinets	Clean spills Clean interior surfaces and racks Clean outside surfaces	Immediately Daily, at closing Daily, at closing
Ice Machine	Clean doors, gaskets and outside surfaces Drain ice, clean and sanitize interior surfaces Flush ice making unit	Daily, at closing Monthly Monthly
Microwave	Clean spills Clean and sanitize interior surfaces Disassemble, clean and sanitize fan shield and tray Clean outside surfaces	Immediately At the end of each shift Daily, at closing Daily, at closing
Ovens, Conventional, Convection, Deck and Combi	Clean spills Clean interior surfaces and racks Clean outside surfaces	Immediately Weekly Daily, at closing
Pulpers	Clean spills and splashes Clean and sanitize all exposed surfaces	As soon as possible Daily, at closing
Range	Clean spills Clean and sanitize work surfaces	Immediately At the end of each shift
Reach-in Refrigeration and Freezer Units	Clean spills Clean doors, gaskets and outside surfaces Empty, clean and sanitize	Immediately Daily, at closing Weekly (defrost and clean freezers monthly)
Scales	Clean and sanitize scale tray Clean and sanitize exposed surfaces	After every use Daily, at closing
Sinks	Clean and sanitize sink interior Clean outside surfaces and backsplash Clean legs and supports	After each use Daily, at closing Weekly

Area	Task	Frequency
Steam-jacketed Cooking Vessels	Clean and sanitize inside surfaces disassemble, clean and sanitize spigots and valves Clean outside surfaces	After each use daily, at closing At the end of each shift
Steam Tables	Drain water and clean well Clean outside and surrounding surfaces De-lime unit	At the end of each shift At the end of each shift Weekly
Steamer	Clean spills Clean and sanitize interior surfaces and racks Clean outside surfaces De-lime	Immediately Daily, at closing Daily, at closing Monthly or more frequently if needed
Walk-in Refrigeration and Freezer Units	Clean spills Sweep and damp mop Clean door surfaces and gaskets Scrub floors Clean walls Clean fans Empty, clean racks, walls, floors and corners	Immediately At the end of each shift daily, at closing daily, at closing Weekly Monthly Monthly (defrost freezer)
Warewashing and Dish Machine	Disassemble and clean Clean doors, gaskets and surfaces De-lime machine	As frequently as necessary Daily, at closing Monthly or more frequently if needed
Work Tables	Clean and sanitize tops and shelves Clean legs and supports Empty, clean and sanitize drawers	After each use and after each shift Weekly Weekly

Equipment/Facilities Cleaning Log

Type of Equipment:			Location:	
Cleaning Frequency Required:			Cleaning Agent(s):	
Date	Time	Cleaning Agents Used	Signature	Comments
Audited By:			Date:	

X. Employee Safety and Sanitation

An estimated 25% of all foodborne illness is due to improper employee practices. Taking responsibility for your own actions helps to protect the public from foodborne illness. As a representative of the food service industry, it is very important that you practice these procedures in your daily work.

Employee Practices

All employees need to be reminded of the following requirements:

1. Only employees are allowed in food service areas.
2. Smoking is not allowed.
3. Employees with cuts, wounds or burns must wear bandages and disposable gloves. Both bandages and disposable gloves should be changed frequently.
4. Work clothes and aprons must be clean and neat - not dirty or wrinkled.
5. Caps, chef hats, bandanas or other methods of hair restraint must be used.
6. Employees should not work if they are ill.
7. Employees should shower or bathe and brush their teeth on a daily basis.
8. Employees should not wear fingernail polish, jewelry or perfume.
9. If employees must sneeze or cough, they should turn away from food and cover their face with their hands. Wash hands immediately.
10. Employees should not touch their face, mouth or other body part without washing their hands after.
11. Keep fingernails short and clean.
12. Food handlers should be free from any gastro or intestinal illnesses or the flu. Cease work and report to the manager when ill.



Hand Washing

Hand washing is your first line of defense against foodborne illness. Unclean hands will contaminate food. For this reason, you need to wash your hands frequently. When a hand sink with water under pressure is not available, a large picnic jug with a tap, a coffee urn or a portable camping sink may be used. Provide a separate bucket under the water container to catch waste water.



Hand washing stations must have dispensed liquid hand soap and disposable paper towels.



1. Moisten hands with water.
2. Apply soap or detergent and work up a lather beyond the wrist.
3. Rub hands together for at least 20 seconds, washing all surfaces, including back of hands, wrists, between fingers and around and under your nails.
4. Rinse off soap or detergent.
5. Dry hands with paper towel or hot air dryer - do not wipe hands with uniform or cloths.
6. If paper towels are available, turn off the water using a paper towel instead of bare hands.

Wash Hands After:

Coughing or Sneezing, or using a tissue or handkerchief.

Leaving the garbage area.

Engaging in any work.

After eating, drinking or smoking.

Nose-touching.

Handling raw food like meat or poultry and prior to handling or preparing ready-to-eat food.

After using the restroom.

New tasks other than handling food.

Disposing of mop water.

Scraping or cleaning food or soil from equipment.

Smoking



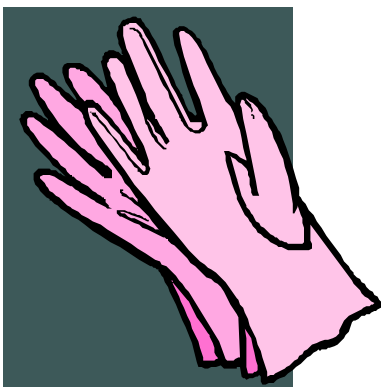
Do not smoke when preparing or serving food and be sure you wash your hands after smoking. Smoking contaminates hands, which may contaminate food. Smoking should only be done during break periods in a designated area separate from the food preparation, dishwashing, and storage areas. Wash hands after smoking to make sure that hands are clean before returning to work.

Culinary Customs

Don't taste foods more than once with the same spoon and don't use your fingers for tasting food. Once used for tasting, a spoon is contaminated, and if placed back into a food item for another taste, the spoon will contaminate the entire dish. Do not use fingers for tasting foods because this will also contaminate the foods. Use a clean spoon for tasting each time and do not reuse it until it has been properly washed and sanitized.



Wearing Disposable Gloves



Wear gloves when you handle foods that are not going to be cooked again. For example:

- Cheese or deli meats
- Placing raw vegetables in the food processor
- Cutting sandwiches
- Serving French fries, fresh fruit or cookies

Whenever possible, use serving utensils. When serving utensils are used, gloves do not need to be worn if the hands do not come in contact with the food.

When wearing gloves, do not touch non-food items and then touch foods to be served. For example:

- Opening doors of coolers or warmers
- Opening packages
- Handling pans or cans
- Operating the steamer, fryers or other equipment
- Serving foods with scoops, spoodles or ladles
- Handling money, tickets, etc.
- Touching face, hair, etc.

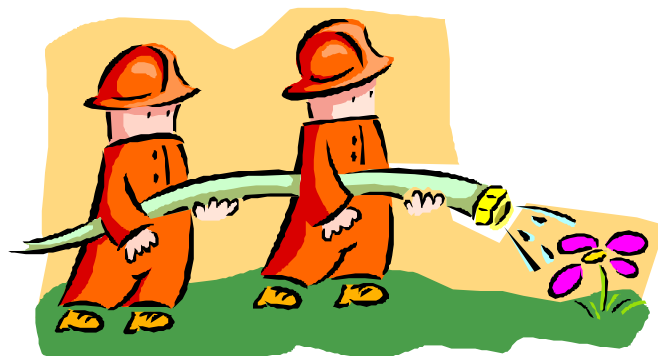
When wearing gloves, do not allow the gloves to come in contact with any items other than the foods to be served. Be especially careful when handling raw or uncooked meats, unwashed fruits and vegetables or when handling garbage.

Prevention of Injuries

By its nature, the food service environment contains potential hazards to employee safety. Studies have shown that most accidents involve human error, and therefore can be prevented. The most common injuries result from burns, falls and cuts.

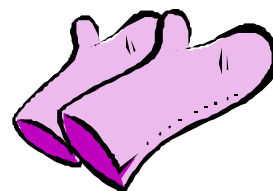
To prevent electrical fires:

- Do not use equipment that sparks or smokes, or that has frayed cords, worn wiring, or missing ground pins.
- Make sure that electrical outlets and light switches have cover plates and are in good repair.
- Ensure that all plugs and outlets are grounded (three-prong).
- Do not use extension cords.
- Make sure all lights have shields or covers and that there is no dust or grease build-up on sockets or wiring.
- All circuit breakers should be labeled.
- The maintenance department should routinely check the cafeteria for safety.
- Cleaning chemicals should be stored in original containers according to federal, state, and local regulations.
- Spills should be cleaned up immediately.
- Routine cleaning should be performed to keep cooking equipment, hoods, vents, filters, walls and work surfaces free from grease build-up.
- Paper products should be stored away from heat sources and chemicals.
- Paper trash should be disposed of promptly.
- Manufacturer's instructions should be carefully followed for using canned heat (i.e., Sterno).
- Make sure that the lid for canned heat is kept nearby during use of product.
- If smoking is permitted on school property, a place and time should be designated for employees to smoke, and designated containers should be provided for cigarette ashes.
- Matches should be extinguished properly by running water over them before discarding.
- Kitchen and dining areas should meet local fire codes and have fire, smoke and/or heat detection devices and alarms installed and maintained to meet requirements.
- One or more hand-held fire extinguishers of correct size and type should be available in the kitchen and placed near possible fire locations.



To prevent burns:

- Use thick, dry pot holders or mitts, and stir food with long-handled spoons or paddles.
- Turn on hot water faucets cautiously. Wear insulated rubber gloves for rinse water that is above 170° F.
- Read and follow instructions for using and cleaning cooking equipment.
- Lift cooking lids and similar equipment away from yourself to avoid burns from steam.
- To avoid splattering and splashing, don't fill kettles above their intended full level.
- Don't allow food to boil over.
- Point pan handles away from traffic, but within reach, to avoid knocking over other pans.
- Do not crowd cooking surfaces with hot pans.
- Remove cooked foods from cooking surfaces immediately.
- Allow oil to cool and use extreme caution when cleaning fryers. Remember, oil and water don't mix. Make sure food is dry before you place it in a fryer.



- Use caution when removing hot pans from ovens. Wear insulated gloves or mitts, and be certain no one is in your path.
- Do not wear clothing that may drape onto a hot spot and catch fire.
- If possible, give verbal warnings when moving hot food and use a cart when possible.
- Release steam from equipment before opening.
- Make sure food is dry before placing in a fryer.
- Make sure flame is turned off before removing a pot from the stove top.
- Do not wear plastic aprons or hats near any kind of heating equipment.
- Use tongs when placing large pieces of food in a boiling pot.
- Make sure that hot foods are covered before they are moved.

To prevent falling:

- Make sure there is enough light in the kitchen and storeroom to see clearly.
- Make sure stairways are well lighted and marked clearly.
- Do not allow electrical cords to obstruct walkways.
- Store food and supplies on pallets or sturdy shelves.
- Ensure that step stools are sturdy and in good repair and never use milk crates or wooden boxes as step stools or chairs.
- Make sure drain lids fit tight to the floor.
- Store mops and brooms away from traffic areas and off the floor.
- Rolling equipment should be pushed rather than pulled.
- Employees should wear closed-toe, skid-resistant, leather shoes.
- Employees should always walk -- never run.
- Clean up wet spots and spills immediately.
- Let people know when floors are wet. Use signs that signal caution and prominently display them.
- Wear shoes that have non-slip soles.
- Do not stack boxes or other objects above head height.
- Keep items such as boxes, ladders, step stools, and carts out of the paths of traffic.



To prevent cuts:

- If our kitchen has one, use a mesh knife safety glove.
- Always use a cutting board. Use plastic or glass cutting boards - wooden ones have been linked to the cross-contamination of food.
- Do not cut food while holding it in your hand.
- Use a knife that is the correct size and has the proper blade for the job you are performing.
- Keep knives sharp and handles secure.
- Use a knife for its intended purpose -- never for opening cans, boxes, jar lids, or prying frozen items apart.
- Step out of the way if a knife is dropped; do not try to catch it.
- Carry a knife by the handle to the side of the body with the blade pointed down.
- Place the knife on a surface for the next person to pick up instead of handing it to them.
- Curve your fingers and use your hand to firmly hold the food item against the cutting board. Slice by cutting downward.
- Keep the point of the chopping knife on the cutting board.
- Cut away from your body, not toward it.



- Wash knives and sharp tools right after using them. Never put them in sinks of soapy water where they cannot be seen.
- Keep the sharp edge of the knife away from you when washing or drying it.
- Store knives in a knife rack or special knife drawer when not in use. Don't throw them in a drawer with other small objects. Don't leave them lying around.
- Handle cutting edges of foil and plastic wrap boxes with care.
- Machines should only be operated when the proper guards are in place.
- Make sure the mixer is stopped before stirring food in bowls.
- Equipment must be turned off if the operator has to leave the area.
- Can openers should be in good repair so that they cut sharply and do not leave ragged edges.
- A separate, clearly marked garbage container should be used for broken glass (no plastic liner).
- Broken glass should be picked up with appropriate tools -- not bare hands.

To prevent lifting injuries:

- Make sure the aisles in the storeroom are wide enough to lift and carry cases without hitting shelves.
- Heavy loads should be stored about waist high for easier lifting.
- Extra-heavy or bulky loads should be marked so personnel can plan a safe lift.
- Enough carts and dollies are available when needed.
- Trays are loaded with the heaviest items in the middle.
- Employees should work together to lift heavy loads.

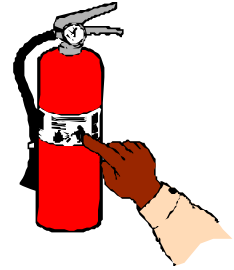


To lift safely:

1. Check the weight of the load to see if it can be lifted alone or if help is needed.
2. Plan the way you will walk with the load. Avoid stairs when possible.
3. Make sure you have firm footing before you begin the lift.
4. Stand close to the object with feet apart about shoulder width.
5. Squat down by bending knees -- never bend over an object to pick it up.
6. Grip with hands and pull object close to body.
7. Straighten back, pulling shoulders back, sticking chest out, and tightening stomach muscles.
8. Lift using the large muscles of your thighs and stomach rather than the small muscles of your back.
9. Keep back straight and use smooth movement, tightening your stomach and buttock muscles. They act as an internal girdle to give your back extra support.
10. Balance the load in the center of your body.
11. Stand and walk, keeping your back as straight as possible and avoid twisting when you lift.
12. To turn, move your feet, keeping back straight.
13. Set load down by bending your knees and squatting, not bending over from the waist.
14. Set down one corner, remove your hand, then set the rest of the load down.

Chemical Safety

- Store cleaning chemicals in original containers in a secure, separate area away from food.
- Ensure that the chemical storage area is kept secure.
- Never use chemicals near open containers of food.
- Read chemical labels and select the correct cleaning chemical for the job to be done.
- Follow the label directions from the manufacturer whenever using chemicals.
- Wear protective clothing and/or equipment as required or needed.
- Never mix chemicals together.
- Ensure that chemical containers are kept tightly sealed and do not permit odors or vapors to escape.
- Chemicals should be stored away from heat sources.
- Make sure that cuts, scrapes or other skin wounds are bandaged before using a chemical.
- Always use chemicals in a well-ventilated area.



Customer Complaints

Always take customer complaints seriously and respond to them as quickly as possible. The success of your operation may depend on it. Always seek immediate care for any customer who feels unwell and document in writing any complaint.

If there is a chance that the customer has become ill due to food products you have served, immediately stop serving the items and collect samples of everything served on the line during that customer's visit. Save the samples in case they are needed later.

Staff Training Log

[illegible]

Customer Complaint Record

Date Complaint Received	
Name of Complainant	
Method of Receipt of Complaint	
How to Contact Complainant	
Person Receiving Complaint	
Description of Complaint	
Staff Response to Complaint	
Result of Investigation	
Corrective Action Taken	
Final Response to Complainant	
Complaint Resolution	

Employee Food Safety Plan Checklist

Employee Standards	Yes	No	Comment	Date Corrected
Employees wear proper clothing.				
Hair restraint is worn by food handlers.				
Fingernails are short, unpolished and clean.				
Jewelry is limited to watch and plain ring.				
Gloves are changed at critical points.				
Open sores, cuts, or bandages on hands are completely covered while handling food.				
Adequate hand washing and drying facilities are available.				
Hands are washed routinely and thoroughly using proper handwashing procedures.				
Smoking is observed only in designated areas away from preparation, service, storage and warewashing areas.				
Employees take appropriate action when coughing or sneezing.				
Disposable tissues are used and disposed of when coughing/blowing nose.				
Personnel with infections are restricted.				
Employee illnesses are documented.				
Utensils/Equipment Standards	Yes	No	Comment	Date Corrected
All small equipment and utensils, including cutting boards, are thoroughly cleaned between uses and sanitized where necessary.				
Small equipment and utensils are air dried.				
Work surfaces are clean to sight and touch.				
Work surfaces are washed and sanitized between uses.				

Thermometers are washed and sanitized between each use.				
Can opener is clean.				
Drawers and racks are clean.				
Small equipment is inverted, covered, or otherwise protected from dust or contamination when stored.				
Cleaning/Sanitizing Standards	Yes	No	Comment	Date Corrected
Three-compartment sink is properly set up for warewashing (wash, rinse, sanitize).				
Cleaning procedures are in place for utensils, equipment and premises.				
Chlorine test kit or thermometer is used to check sanitizing rinse.				
If heat sanitizing, the utensils are allowed to remain immersed in water at correct temperature for correct amount of time.				
If using chemical sanitizer, it is the proper dilution.				
Cleaning chemicals and equipment are stored properly.				
The utensils are allowed to air dry.				
Wiping cloths are stored in sanitizing solution while in use.				
Cleaned tableware and utensils are properly stored.				
Garbage Disposal Standards	Yes	No	Comment	Date Corrected
Adequate garbage containers are provided.				
Garbage containers are washed and sanitized.				
Garbage containers are emptied as necessary.				
Boxes and containers are removed from site.				
Garbage storage area is protected from insect or rodent infestation.				
Proper storage is available for				

brooms, mops, and other cleaning utensils outside of food production areas.				
Pest Control Standards	Yes	No	Comment	Date Corrected
Screens are on open windows and doors and in good repair.				
A pest control program is in place.				
No evidence of pests is present.				
Receiving Standards	Yes	No	Comment	Date Corrected
Food and supplies are inspected immediately upon receipt.				
All food and supplies are promptly moved to proper storage areas.				
Receiving area is clean and free of food debris, boxes, or other refuse.				
Refrigerated and frozen products are arriving at correct temperatures.				
Products are supplied by approved suppliers.				
Dry Storage Standards	Yes	No	Comment	Date Corrected
Storage area is dry and well ventilated.				
All food and paper supplies are stored off the floor.				
All food is labeled with name and delivery date.				
First-in/first-out procedures are followed.				
There are no bulging or leaking canned goods in storage.				
Opened bulk-food supplies are stored in containers with tight-fitting lids.				
Food is protected from contamination.				
All surfaces and floors are clean.				
Chemicals and clean supplies are stored away from food and other food-related supplies.				
Cold Storage Standards	Yes	No	Comment	Date Corrected
Thermometer is conspicuous and accurate.				
Proper temperatures are				

maintained in all storage facilities.				
All food is stored off the floor.				
Units are clean.				
Foods are arranged to permit air circulation.				
Cooked foods are stored above raw foods.				
Proper chilling procedures have been practiced.				
All food is properly wrapped, labeled and dated.				
First-in/first-out procedures are being followed.				
Food Handling Standards	Yes	No	Comment	Date Corrected
Frozen food is thawed under refrigeration or in cold running water.				
Food is not allowed to be in the danger zone for more than two hours.				
Food is tasted using proper methods.				
Food is not allowed to become cross-contaminated.				
Food is handled with utensils, clean, gloved hands or clean hands as appropriate.				
Utensils are handled to avoid touching parts that will be in direct contact with food.				
Reusable towels are used only for sanitizing equipment surfaces and not for drying hands, utensils, floor, etc.				
Hot/Cold Holding Standards	Yes	No	Comment	Date Corrected
Units are clean				
Food is heated to correct temperature before being placed in hot holding unit.				
Temperature of food being held is appropriate.				
Temperature of cold food being held is appropriate.				
Food is protected from contamination.				
Transport Standards	Yes	No	Comment	Date Corrected
Transport containers and carts are regularly cleaned and				

sanitized.				
Proper temperatures are maintained during transport.				
Transport carts and containers for food are covered.				
Transport vehicle is clean.				
Other Standards	Yes	No	Comment	Date Corrected
Audited by:			Date:	

XI. Monitoring

Establish Monitoring Procedures

Monitoring is very important in Child Nutrition Programs and involves measuring or observing time and/or temperature to assess whether procedures are controlled and used to prevent any contamination. Monitoring also alerts food service staff to problems in the flow of food so that corrective action can be taken immediately. The methods used should be kept as simple as possible and accurate records should be kept as documentation.



There are two types of monitoring:

1. **Continuous:** Constant monitoring of a procedure. Continuous monitoring is preferred, but not always possible.
2. **Non-continuous:** Monitoring at scheduled intervals. Non-continuous monitoring should be scheduled often enough to keep any food safety hazards under control.

It is wise to construct a team approach to food safety in your Child Nutrition Program -- having many eyes and ears on the procedure is more effective than just assigning one person to a monitoring task. Each member of your food safety team should be instructed on their duties and responsibilities whether specific or general.

Examples of Monitoring

- Identify what is to be monitored.
- Identify how it is to be monitored.
- Identify when it should be monitored.
- Identify where to record results of the monitoring.
- Identify who is responsible for performing the monitoring.

Examples of Monitoring Requirements

- Temperature tracking
- Danger Zone time measurements
- Visual observation of “use by” date and stock rotation
- Visual observation of equipment and work surface cleanliness
- Visual inspection of incoming food materials

Successful Monitoring

- Clearly identify who is responsible for each monitoring procedure and make sure they understand their task(s).
- Train employees on why monitoring is important.

- If you are a manager, always take a lead role in ensuring that the monitoring procedures are followed.
- Provide continuous instruction on the methods for monitoring and recording monitoring results.
- Instruct on corrective action procedures required to be taken if problems are encountered.
- Keep accurate, scheduled monitoring logs.

Monitoring Procedures

[illegible]

XII. Corrective Action

Corrective action is a specific, pre-planned action that a Child Nutrition Program must take when problems occur. After determining any problems during monitoring, you need to take immediate corrective action. If problems are not corrected, your program cannot be effective and the food you serve may be unsafe.



Establish Corrective Action Procedures

Ideal conditions are not always possible, so problems do arise. Moreover, problems will vary in each Child Nutrition Program because operations vary in their size, menu items, serving procedures, equipment, etc.

Pre-planning is the key to corrective action so that staff can take decisive, prompt action to correct any problems that arise.

Many corrective actions are simple, such as continuing to cook the food until the desired internal temperature is met. Others are more involved and may require changing the food preparation process, etc.

Examples of Corrective Action

- Identify what specific action(s) will be taken to correct the problem.
- Identify who will be responsible for implementing the corrective action.
- Identify who will document the corrective action(s).
- Identify and eliminate the cause of the problem if possible.
- Prevent the problem from recurring.
- Make sure no product that is injurious to health or adulterated is served.

Examples of Corrective Action Requirements

Since each Child Nutrition Program is different, corrective actions will vary according to the needs of the site and staff.

Corrective actions should be measurable, specific, based on facts, and appropriate for normal working conditions in the operation.

Successful Corrective Action

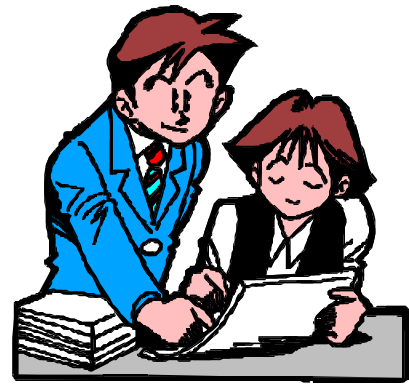
- Clearly identify who is responsible for each corrective action procedure and make sure they understand their task(s).
- Train employees on why corrective action is important.
- If you are a manager, always take a lead role in ensuring that the corrective action procedures are followed.
- Provide continuous instruction on the methods for corrective action and recording corrective action results.
- Keep accurate, scheduled corrective action logs.

Staff Responsible for Corrective Action

Duties	Responsible for Action	Responsible for Documentation
Hazard 1 Identify:		
Identify cause of hazard		
Bring hazard under control		
Prevent hazard from recurring		
Ensure that no product is served that is injurious to health or adulterated		
Hazard 2 Identify:		
Identify cause of hazard		
Bring hazard under control		
Prevent hazard from recurring		
Ensure that no product is served that is injurious to health or adulterated		
Hazard 3 Identify:		
Identify cause of hazard		
Bring hazard under control		
Prevent hazard from recurring		
Ensure that no product is served that is injurious to health or adulterated		
Hazard 4 Identify:		
Identify cause of hazard		
Bring hazard under control		
Prevent hazard from recurring		
Ensure that no product is served that is injurious to health or adulterated		
Hazard 5 Identify:		
Identify cause of hazard		
Bring hazard under control		
Prevent hazard from recurring		
Ensure that no product is served that is injurious to health or adulterated		
Hazard 6 Identify:		
Identify cause of hazard		
Bring hazard under control		
Prevent hazard from recurring		
Ensure that no product is served that is injurious to health or adulterated		

XIII. Verification

Verification procedures should be used to ensure that all phases of your food safety plan are working correctly. Verification allows you to maintain an effective food safety program and update the program functions as needed. This includes confirming that problems have been identified, monitoring procedures are alerting the operation to potential hazards, corrective actions are adequate and employees are following procedures.



Establish Verification Procedures

There are three types of verification procedures:

1. **Initial verification:** This is done by the food safety staff immediately upon the creation of the plan. The purpose of initial verification is to determine if the program is technically sound, if all hazards have been identified, and if the plan will control the problems adequately. Staff should feel free to use outside experts (such as regulatory personnel, extension experts, equipment dealers, and food vendors) to look over their food safety program. Resources such as scientific studies, regulatory requirements, and product testing results can also be useful tools as you verify your plan. Most importantly, staff should use observation of food flow, times, temperatures, etc to ensure that it has set sufficient limits for the equipment and working conditions.
2. **Ongoing verification:** This type of verification is done regularly to make sure needs are being met, employees are following monitoring procedures, and corrective actions are being taken. The staff needs to establish verification procedures that need to happen daily, weekly and monthly. Staff also needs to identify who will perform the procedures and how they will be performed and documented.
3. **Reassessment of the food safety plan:** The food safety plan should be updated and revised as needed; however, an annual review is advised. The following are some conditions that could require an operation to reassess its food safety plan:
 - a. New items are added to a menu.
 - b. Menus or recipes change.
 - c. Storage or preparation procedures change.
 - d. Food is linked to a foodborne illness outbreak or complaint.
 - e. Changes in customers, suppliers, or facilities.
 - f. New equipment is introduced.
 - g. Product changes occur in formulation, production or distribution.
 - h. New food safety information becomes available.
 - i. Personnel changes have occurred.
 - j. Changes are made to food regulations.

NOTE: Verification is best performed by someone other than the person who is responsible for performing the activities specified in the plan.

Examples of Verification Procedures

- Observe employees performing tasks, especially at problem areas.
- Establish appropriate verification inspection schedules.
- Check monitor and corrective action records frequently.
- Review monitoring and corrective action procedures to ensure there is adequate control over problems that occur.
- Review corrective action results and implement new procedures if necessary.
- Check process or finished product.
- Check equipment calibration records.
- Check accuracy of equipment that continuously monitors temperatures, as in cook-chill equipment, freezers, and refrigerators.
- Periodically review the total plan.
- Periodically review any modification to the plan.

Successful Verification

Training and knowledge in food safety planning are very important if your safety plan is to be successful and effective. Verification should include a plan to train employees in carrying out actions specified in the plan. Employees should be trained so that problematic activities are a part of their normal duties and expectations and are not seen as add-on actions. They should receive additional training periodically, as needed, to reinforce the procedures that they need to carry out. In addition, food service directors need to stay current with regulatory changes and perspectives on safety implementation.

Verification Procedures Schedule

[illegible]

Verification of Monitoring

Monitoring Procedure Verified	Verification Completed By	Date/Verification Schedule	Documentation

Verification of Corrective Action

Date	Time	Procedure Requiring Corrective Action	Describe Corrective Action Taken	Menu Items/ Products Involved	Possible Cause	Corrective Action Taken By	Verified By

Food Safety Plan

Potential Hazard	Monitoring Procedures	Corrective Actions	Verification Procedures	Required Records	Overall Responsibility	Comments

XIV. Record Keeping

It is very important that accurate records are retained in all phases of the food safety plan so that you can document compliance, show that appropriate corrective actions were taken (or that they were avoided), and to help identify areas where food safety problems occur so that you know what to do to correct these problems.

To effectively set up a record keeping procedure, records must be accurate and must contain enough information to determine whether food safety procedures are being performed correctly.



Because the food safety plan is unique to each operation, the food safety plan records must also be tailored to the operation. It is helpful to keep it simple and to make sure that it becomes a part of employees' daily routine.

Establish Record Keeping Procedures

1. Determine what records the operation should keep. Be sure to include records that are generated during the operation of the plan (such as time and temperature logs) and support documentation (such as employee training records). The following are some examples of food safety records:
 - List of food safety plan team members and duties assigned to each, along with frequency of duties.
 - Description of the food, its distribution, intended use and consumers.
 - Standardized recipes.
 - Summary of problematic areas.
 - Food process flow description or diagram.
 - Monitoring procedures.
 - Corrective action procedures.
 - Verification procedures and schedule.
 - Record-keeping procedures.
 - Documentation of the adequacy of the food safety plan from knowledgeable expert.
 - Supplier certification records documenting compliance of foods.
 - Processor audit records verifying supplier compliance.
 - Data establishing the safe shelf life of the product, if age of product can affect safety.
 - Records indicating compliance with procedures when packaging materials, labeling or sealing specification are necessary for food safety.
 - Calibration logs.
 - Time/temperature logs.
 - Monitoring logs.
 - Corrective action logs.
 - Verification records.
 - Employee training records.
2. Determine where the records will be kept. Old logs and records need to be retained. NOTE: Logs should be kept where they are easily accessible to the employees who must record information on them.
3. Determine who will keep the records. Record completion should be part of employees' daily duties.
4. Determine what forms/logs will be used for these records. Also determine what support documentation, such as shipping receipts, supplier specifications, etc., need to be kept with food safety files.
5. Determine when these forms/logs should be filled out and filed.

Record Keeping Procedures

[illegible]

XIV. Sources

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